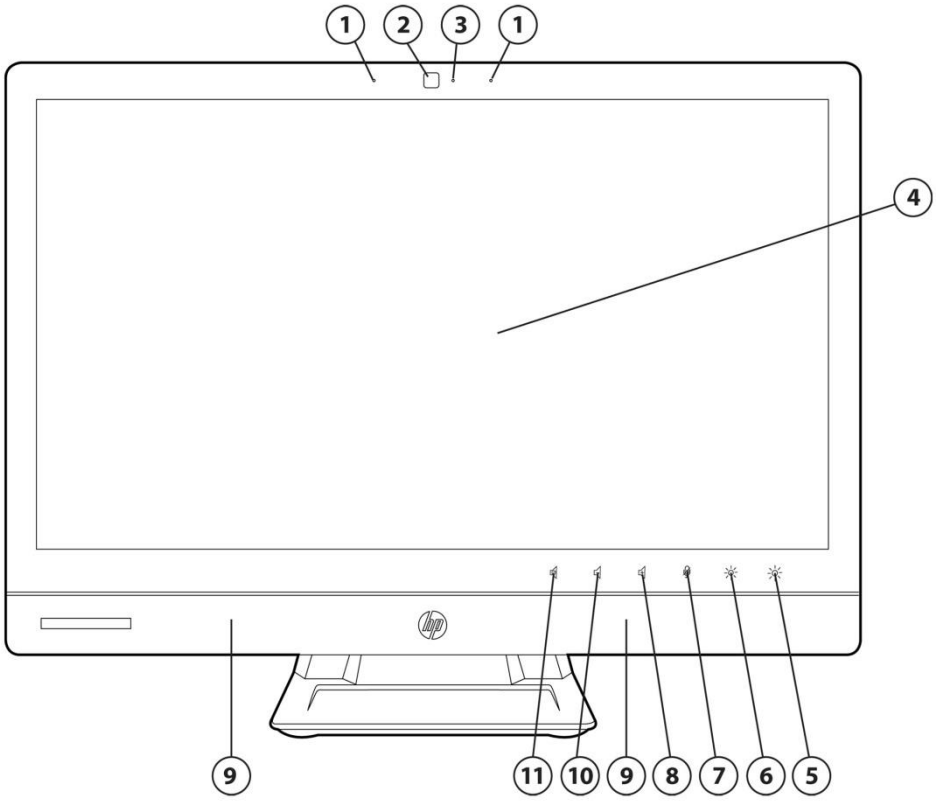
*Overview*

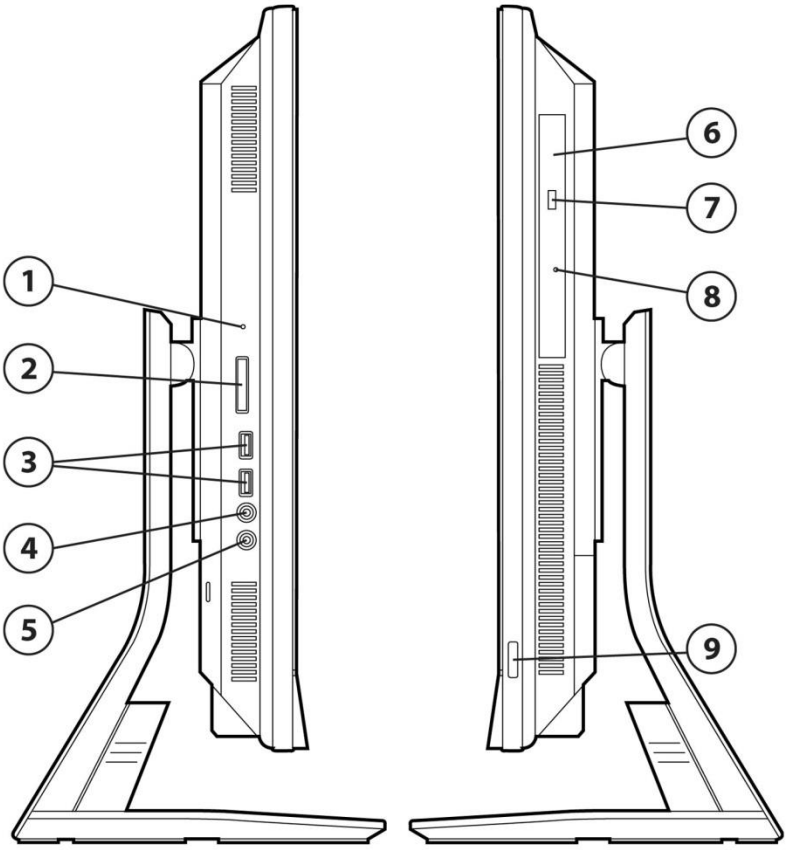
# HP EliteOne 705 G1 All-in-One Business PC




**FRONT**

1. Dual microphone array (only on models with Webcam)
2. 2.0 MP Webcam (optional)
3. Webcam Activity LED
4. 23-inch IPS Full HD capable screen
5. Increase brightness
6. Decrease brightness
7. Mute microphone
8. Increase volume
9. High performance stereo speakers
10. Reduce volume
11. Mute speaker

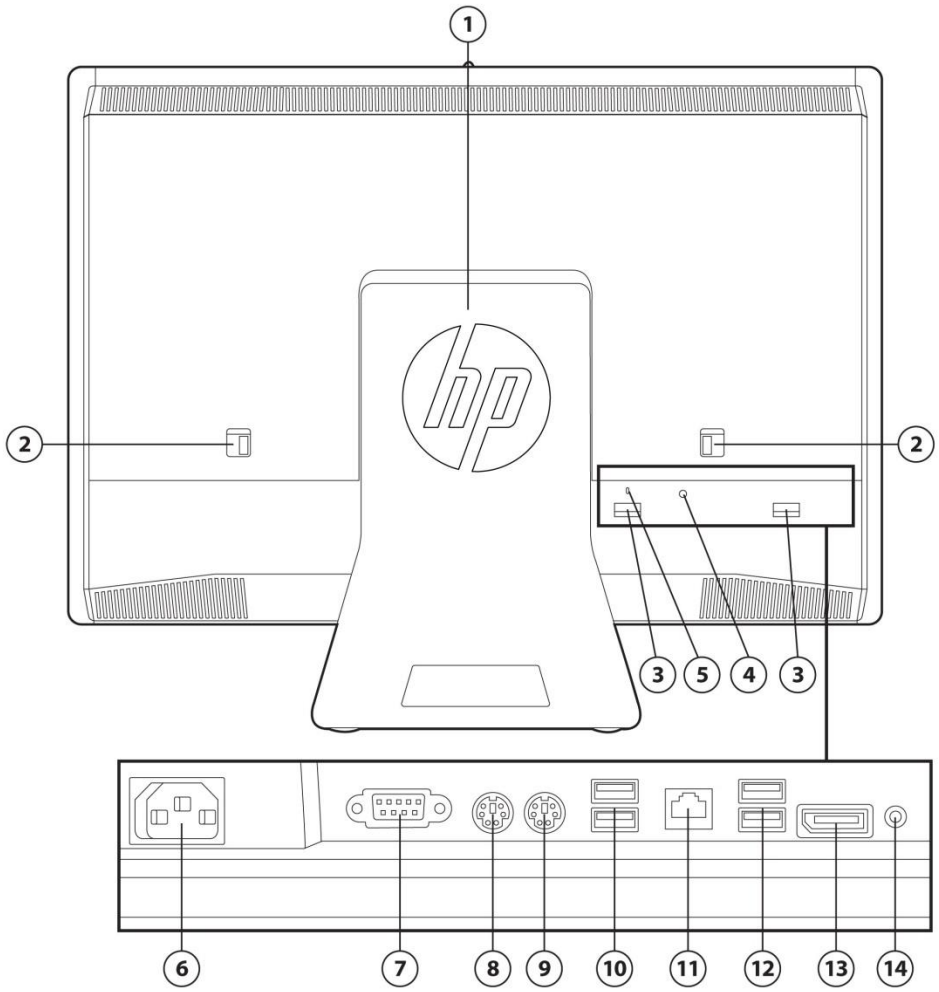
# HP EliteOne 705 G1 All-in-One Business PC




**SIDE**

1. Hard disc drive activity LED
2. HP SD media card reader (optional)
3. (2) USB 3.0 ports, including 1 fast charging port
4. Microphone/line in jack
5. Headphone/line out jack
6. Tray-load optical disc drive (optional)
7. Optical disc drive eject button
8. Optical disc drive activity LED
9. Power button

# HP EliteOne 705 G1 All-in-One Business PC




## REAR/PORTS (BEHIND SECURITY COVER)

1. Basic Stand*
2. Access panel latches
3. I/O security cover latch
4. Security Screw hole
5. Security lock slot
6. Power connector
7. Serial port
8. PS/2 mouse connector
9. PS/2 keyboard connector
10. (2) USB 2.0 ports
11. RJ-45 Gigabit Ethernet port
12. (2) USB 3.0 ports
13. DisplayPort connector
14. Stereo line out

* Can be configured with no stand, basic stand, or height adjustable/reclining stand.

## AT A GLANCE

- Windows 7, Windows 8.1, or Linux
- UEFI BIOS developed and engineered by HP for better security, manageability and software image stability
- Integrated All-in-One form factor
- 23-inch IPS (1920 x 1080) diagonal widescreen WLED backlit anti-glare LCD
- Landscape or portrait display orientation – with height adjustable stand or VESA mount
- Can be configured with no stand, basic stand, or height adjustable/reclining stand
- AMD® D4 chipset
- AMD® A-Series PRO processors
- AMD® DASH 1.1 Technology available
- Integrated AMD® Graphics
- Integrated Broadcom NetXtreme Gigabit Ethernet Plus Gigabit Network Connection
- Optional wireless connectivity:
  - WLAN and Bluetooth Combo Card - HP 802.11 a/b/g/n and Bluetooth® 4.0
- Optional Near Field Communication (NFC)
- Optional Integrated 2.0 MP Full HD Webcam & Dual Microphone Array
- High performance integrated stereo speakers
- DTS Studio Sound™
- Up to 16 GB of DDR3 SDRAM, dual channel memory support, two SODIMM slots
- Support for up to 3 storage drives (2 SATA, 1 M.2 SSD) with RAID support
- Up to 500GB SATA Hard Drive, up to 256GB Solid State Drive, 500 GB Self-Encrypting Drive, 256GB Self-Encrypting Solid State Drive, and 1TB Solid State Hybrid Drive
- Optional slim Tray-load SuperMulti DVD Writer, DVD-ROM, or BDXL Blu-ray Writer Optical Disc Drive
- Optional SD Media Card Reader
- Serial port
- DisplayPort out
- Integrated VESA 100 x 100 mounting holes
- Lockable rear access panel with intrusion sensor
- ENERGY STAR® qualified. EPEAT® registered where applicable/supported. See www.epeat.net for registration status by country.
- CCC, CECP & SEPA Certified
- Optimized for Microsoft Lync
- TCO AiO and TCO Edge
- Low Halogen
- Arsenic Free
- Protected by HP Services, including warranties up to 5-5-5 (terms and conditions vary by country; certain restrictions and exclusions apply)

**NOTE: See important legal disclosures for all listed specs in their respective features sections.**

*Standard Features and Configurable Components*

## OPERATING SYSTEMS

**Preinstalled When Purchased**

Windows 8.1 Pro (64-bit)*
Windows 8.1 (64-bit)*
Windows 7 Professional (32-bit)*
Windows 7 Professional (64-bit)*
Windows 7 Professional (32-bit) (available through downgrade rights from Windows 8.1 Pro)**
Windows 7 Professional (64-bit) (available through downgrade rights from Windows 8.1 Pro)**

FreeDOS 2.0

Ubuntu Linux (64-bit)***

*Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows functionality. See http://www.microsoft.com.

**This system is preinstalled with Windows 7 Professional software and also comes with a license and media for Windows 8.1 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

***Not all features are supported in Ubuntu Linux.

## CHIPSET

AMD® D4 Chipset

## PROCESSORS

**AMD® Quad-Core A10 APU with AMD Radeon™ HD Graphics***
AMD Quad-Core A10 PRO-7800B Accelerated Processor with AMD Radeon™ R7 Series
Up to 3.9 GHz Max. Boost Frequency (3.5 GHz base frequency)
4 MB L2 cache, 4 cores, 8 Graphics Core Next Cores
Discrete-Class Graphics
Supports DDR3 memory up to 2133 MT/s data rate
Supports AMD® DASH 1.1 Technologies

**AMD® Quad-Core A8 APU with AMD Radeon™ HD Graphics***
AMD Quad-Core A8 PRO-7600B Accelerated Processor with AMD Radeon™ R7 Series
Up to 3.8 GHz Max. Boost Frequency (3.1 GHz base frequency)
4 MB L2 cache, 4 cores, 6 Graphics Core Next Cores
Discrete-Class Graphics
Supports DDR3 memory up to 2133 MT/s data rate
Supports AMD® DASH 1.1 Technologies

**AMD® Dual-Core A6 APU with AMD Radeon™ HD Graphics***
AMD Dual-Core A6 PRO – 7400B Accelerated Processor with AMD Radeon™ R5 Series
Up to 3.9 GHz Max. Boost Frequency (3.5 GHz base frequency)
1 MB L2 cache, 2 cores, 4 Graphics Core Next Cores
Discrete-Class Graphics
Supports DDR3 memory up to 1866 MT/s data rate
Supports AMD® DASH 1.1 Technologies

**AMD® Dual-Core A4 APU with AMD Radeon™ HD Graphics***
AMD Dual-Core A4 PRO – 7350B Accelerated Processor with AMD Radeon™ R5 Series
Up to 3.8 GHz Max. Boost Frequency (3.4 GHz base frequency)
1 MB L2 cache, 2 cores, 3 Graphics Core Next Cores
Discrete-Class Graphics
Supports DDR3 memory up to 1866 MT/s data rate
Supports AMD® DASH 1.1 Technologies

*Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. 64-bit computing system required. Performance will vary depending on your hardware and software configurations. AMD's numbering is not a measurement of clock speed.

## GRAPHICS

**System Integrated Graphics**

AMD® HD Graphics

| | |
|---|---|
| Graphics controller | AMD® Processor Graphics |
| DisplayPort | Display Port 1.2 multi-stream (supports 3 additional external displays)[1] |

[1] Using the Integrated Graphics, three (3) external displays are supported via one of these methods:

| | |
|---|---|
| Memory | Up to 1.8GB DDR3<br>Note: Maximum memory capacities assume Windows 64-bit operating systems or Linux. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements. |
| Supported Graphics APIs | DX11.1, OpenGL 4.0, OpenCL 1.2, full 1080p Blu-Ray Disc (H264) playback in hardware |

## SMBIOS

System Management BIOS, previously known as DMI BIOS, is used to store system management information.

## DISPLAY

Non-touch

23"diagonal IPS widescreen WLED backlit anti-glare LCD; Orientation designed to operate in portrait or landscape

| | | |
|---|---|---|
| **Display Panel** | Type | IPS WLED Backlit LCD |
| | Viewable image area (mm) | 509.18 x 286.42 |
| | Screen opening (mm) | 510.6 x 287.6 |
| | Native Resolution (HxV) | 1920 x 1080 |
| | Aspect ratio | 16:9 |
| | Pixel pitch (HxV)(mm) | 0.256 x 0.256 |
| | Contrast ratio (typical) | 1000:1 |
| | Brightness (typical) | 250 nits (cd/m2) |
| | Viewing angle (typical) (HxV) | 179 ° x 179 ° |
| | Backlight lamp life (to half brightness) | 30,000 hours minimum |
| | Color support | Over 16 million colors |
| | Color gamut (typical) | 72% |
| | Anti-glare | Yes |
| | Default color temperature | Warm (6500K) |
| | **NOTE:** All performance specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower. | |
| **Basic Stand** | Tilt Angle | -5° to +30° |
| | Rotation | 360° swivel |
| **Height Adjustable / Reclining Stand:** | Vertical Adjustment | Up to 110 mm |
| | Recline Angle | Low position sliding height adjustment => -5° to +60° |
| | Tilt Angle | High position sliding height adjustment => -5° to +30° |
| | Rotation | 360° swivel and portrait or landscape orientation |

1) DisplayPort multi-stream monitors 'daisy-chained' together or
2) DisplayPort multi-stream hub – hub requires power through power cable provided. DisplayPort multi-stream hub provides 4 DisplayPort ports, adapters are required for support of DVI, VGA or HDMI displays.

## WEBCAM & MIC

Optional integrated 2 MP full HD webcam & dual microphone array; maximum resolution of 1920 x 1080

## STORAGE*

**2.5" SATA Hard Drive**
320 GB, 7200 rpm, SATA 6.0 Gb/s, SMART IV
500 GB, 7200 rpm, SATA 6.0 Gb/s, SMART IV

**2.5" M.2 PCIe Solid State Drive**
128GB M.2 PCIe Solid State Drive

**2.5" Solid State Drive**
128 GB, SATA, non- SED, Solid State Drive
256 GB, SATA, non- SED, Solid State Drive

**2.5" Self-Encrypting Solid State Drive**
120 GB, SATA, Self-Encrypting Solid State Drive
128 GB, SATA, Self-Encrypting Solid State Drive
180 GB, SATA, Self-Encrypting Solid State Drive
256 GB, SATA, Self-Encrypting Solid State Drive

**2.5" Self-Encrypting Drive**
500 GB, SATA, Self-Encrypting Drive

**2.5" Solid State Hybrid Drive**
500 GB, SATA, Solid State Hybrid Drive
1 TB SATA, Solid State Hybrid Drive

*For hard drives and solid state drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and 36 GB (for Windows 8.1) of system disk is reserved for the system recovery software.

**Optical Disc Drive**
Slim Tray-load SATA DVD-ROM
Slim Tray-load SATA SuperMulti DVD Writer
Slim Tray-load SATA BDXL Blu-ray Writer
No included Optical Disc Drive

**Removable**
HP Slim Removable SATA HDD

**Media Card Reader** (optional)
5-in-1 SD Media Card Reader - PCIe Interface

- Supports Secure Digital (SD, SDXC, SDHC, UHS-I, UHS-II)

*Standard Features and Configurable Components*

## MEMORY*

**Type**
Non-ECC, DDR3 SDRAM, 1600 MT/s, SODIMM

**Maximum**
16 GB

**# of Slots**
2
204-pin supporting dual-channel memory
Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

* Full availability of 4 GB or more of memory requires a 64-bit operating system. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

Memory modules support data transfer rates up to 1600 MT/s; actual data rate is determined by the system's configured processor. See processor specifications for supported memory data rate.

## NETWORKING/COMMUNICATIONS

**Ethernet (RJ-45)**
Integrated Broadcom NetXtreme Gigabit Ethernet Plus Gigabit Network Connection

**Wireless LAN** (optional)*
HP 802.11 a/b/g/n wireless PCIe minicard with Bluetooth Combo
Up to 300 mbps data rate
Bluetooth 4.0 compliant
Works with a wide range of Bluetooth devices

Intel® 802.11 a/b/g/n wireless 7260 PCIe minicard
Up to 300 mbps data rate

*Wireless access point and Internet service required and not included. Availability of public wireless access points limited

**Near Field Communications (NFC)** (optional)
HP Module with NXP NFC Controller with Embedded Secure Element, PN650
Supports Windows 8.1, Proximity Events
Support Windows 7, PC/SC
NFC Forum Compliant

## AUDIO/MULTIMEDIA

DTS Studio Sound™

Realtek ALC 3228 Audio – 16 & 24-bit PCM

High performance integrated stereo speakers

Volume control and mute buttons

Stereo headphone jack

Microphone in

Stereo line out

Integrated 2.0 MP webcam (up to 30 frames/sec ) & dual microphone array (optional)

## KEYBOARDS AND POINTING DEVICES

**Keyboard**

| | |
|---|---|
| HP PS/2 Keyboard | 104 keys plus special functions for Mute, Volume Up, Volume Down, Sleep<br>Separate numeric keypad<br>Cable length 70.87 in (180 cm) |
| HP USB Keyboard | 104 keys plus special functions for Mute, Volume Up, Volume Down, Sleep<br>Separate numeric keypad<br>Cable length 51 in (130 cm) |
| HP Wireless Keyboard & Mouse<br>(Keyboard contains 25% post-consumer recycled plastic material) | 104 keys plus special functions for Mute, Volume Up, Volume Down, Sleep<br>Separate numeric keypad; two buttons with scroll wheel acting as third button<br>Operates at ~ 2.4 GHz and supports a working distance of up to 32 ft (10m)<br>Cable length 6ft (1.8m) |
| HP USB SmartCard CCID Keyboard | 104, 105, 106, 107, 109 layout (depending upon country)<br><br>All ISO 7816 smart cards |
| HP USB PS/2 Washable Keyboard** | SpillSeal® keyboard technology protection<br>USB & PS/2 support in one solution<br>Separate numeric keypad<br>Cable length 7ft (2.2m) |

**Mice**

| | |
|---|---|
| HP PS/2 Mouse | 800 dpi support<br><br>Two buttons with scroll wheel<br>72.8 in (185 cm) |
| HP USB Optical Mouse | 800 dpi support<br><br>Two buttons with scroll wheel<br>72.8 in (185 cm) |
| HP USB 1000dpi Laser Mouse | 1000 dpi support<br>Two buttons with scroll wheel<br>Cable length 70.8 in (180 cm) |
| HP USB PS/2 Washable Scroll Mouse ** | SpillSeal® mouse technology protection<br>Two buttons with scroll wheel<br>8.8 ft total 70 cm+ 2m extension |

** Low Halogen - External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.

## HP BIOSphere

Key features of the HP BIOS include:

- Deployment and manageability - HP BIOS provides several technologies that help integrate the HP EliteOne 705 Business PC into the enterprise, such as PXE, remote configuration, remote control, and F10 Setup support for 12 languages.
- Stability - HP BIOS supports the HP stable product roadmap by releasing only critical BIOS changes to the factory and advanced change notification.
- Support UEFI specification 2.3.1
- Absolute Data Protect agent - For tracking and tracing services, available in select countries, separate software and purchase of a subscription is required.
- Thermal and power management - The HP BIOS provides and enables thermal and power management technologies so component temperatures are managed for high reliability and to assist in operating the HP Business Desktop computer in any enterprise environment.
- Thermal Controlled Fans – Automatic or manual controlled fan speeds for cooling and acoustic performance. Serviceability - HP BIOS provides diagnostic and detailed service information.
- Upgrades and recovery - HP BIOS provides numerous ways to upgrade HP Business Desktop computers, including BIOS updates from within DOS (DOSFlash), BIOS updates from within Windows (HPQFlash), HP Client Manager, and fail-safe recovery (Emergency Boot Block Recovery). In addition, the HP Business Desktop BIOS Utilities tool enables replicated BIOS setup throughout the Enterprise; it is available from within the BIOS F10 setup and from the support website.
- HP BIOS uses PKI signing of the BIOS for trusted BIOS upgrades and recovery.
- Serviceability – HP BIOS provides diagnostic and detailed service information.

Additional HP BIOS Features

- Power-On password - Helps prevent an unauthorized user from powering on the system.
- Administrator password - Also known as the setup password, this helps prevent unauthorized changes to the system configuration. If the administrator password is not known, the BIOS version cannot be changed and changes cannot be made to BIOS settings using F10 setup or under the OS.
- Advanced Configuration and Power Interface (ACPI) - Represents a significant innovation in power and configuration management, allowing operating systems and applications to manage power based on activity and usage. HP Elite models use ACPI to provide power conservation features.
- S5 Max Power Savings setting supports EU Lot6 requirement and allows the computer to power down below 1W is S5 (when turned off). When S5 Max Power Savings feature is enabled power to slots is turned off along with WOL functionality.
- Master Boot Record Security - Helps to prevent changes and/or infections to the Master Boot Record caused by viruses or malicious code.
- HP BIOS Protection – prevents unauthorized updates or changes to the BIOS due to malware, viruses, or malicious BIOS updates. Based on NIST SP800-147 policy guidelines.

## SECURITY

USB port disable

Lockable Access Panel

Lockable I/O security cover

Security Screw

HP Keyed Cable Lock (optional)

Common Criteria Certified, Infineon TPM SLB9656TT1.2- 4.32 FW

Intrusion Detector

Wall/Arm/Cart Mountable via VESA bracket

Support for Nobel Locking Plate (3rd party option)

Support for 3M Privacy Screen (3rd party option), for non-touch models

## POWER

Internal 200W, up to 93% efficient, active PFC
100-240V AC

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |

| | |
|---|---|
| High Efficiency | 200W active PFC |
| | |
| | 90/92/89% efficient at 20/50/100% load (100/115V) |
| | |
| | 90/93/91% efficient at 20/50/100% load (230V) |
| Operating Voltage Range | 90 - 264 VAC |
| Rated Voltage Range | 100 - 240 VAC |
| Rated Line Frequency | 50/60 Hz |
| Operating Line Frequency | 47 – 63 Hz |
| Rated Input Current | 3A |
| Rated Input Current with Energy Efficient* Power Supply | 3A |
| Current Leakage | < 275 µA |
| (NFPA 99) | |
| Power Supply Fan | 30mm variable speed |
| Power cord length | 6.0 ft. (1.83 m) |

## SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

| Included | Windows 7 | Windows 8.1 |
|---|---|---|
| **Security** | Absolute Persistence Module[11]<br>Device Access Manager with Just In Time Authentication<br>Drive Encryption (FIPS 140-2)[1]<br>HP File Sanitizer (SSDs and Hybrid Drives not supported)[2]<br>Disk Sanitizer (External Edition)[3,4]<br>HP Client Security<br>HP SpareKey<br>Microsoft Security Essentials[5] | Absolute Persistence Module[11]<br>Device Access Manager with Just In Time Authentication<br>Drive Encryption (FIPS 140-2)[1]<br>File Sanitizer (Activated via Wizard)[2]<br>Disk Sanitizer (External Edition) [3,4]<br>HP Client Security<br>HP SpareKey<br>Microsoft Defender[6] |
| **Multimedia** | Cyberlink Power DVD, BD<br>Cyberlink Power2Go (Secure Burn)<br>Cyberlink YouCam BE[7] | Cyberlink Power DVD, BD<br>Cyberlink Power2Go (Secure Burn) |
| **Communication** | | HP Wireless Hotspot |
| **HP Value Add** | HP ePrint Driver[8]<br>HP Manageability (Activation Required)<br>HP PageLift[9]<br>HP Recovery Disk Creator<br>HP Recovery manager<br>HP Support Assistant | HP ePrint Driver[8]<br>HP Manageability (Activation Required)<br>HP PageLift[9]<br>HP Recovery Manager<br>HP Support Assistant |
| **3rd Party** | Box 50GB Offer[10]<br>Foxit PhantomPDF Express<br>Skype | Box Application<br>Foxit PhantomPDF Express<br>Skype |
| **Microsoft Products** | Buy Office | Buy Office |

[1] Drive Encryption requires Windows. Data is protected prior to Drive Encryption login. Turning the PC off or into hibernate logs out of Drive Encryption and prevents data access.
[2] For the use cases outlined in the DOD 5220.22-M Supplement. Does not support Solid State Drives (SSDs). Initial setup required. Web history deleted only in Internet Explorer and Firefox browsers and must be user enabled. With Windows 8.1, user must turn off Enhanced Protection Mode in IE11 for shred on browser close feature.
[3] Available via download.
[4] For the use cases outlined in the DOD 5220.22-M Supplement. Does not support Solid State Drives (SSDs). Requires Disk Sanitizer, External Edition for Business Desktops from hp.com.
[5] Requires Windows 7 and internet access.
[6] Requires Windows 8 and internet access.
[7] Preinstalled on models with webcam.
[8] Requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see www.hp.com/go/eprintcenter).Requires optional broadband module. Broadband use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Separately purchased data plans or usage fees may apply. Print times and connection speeds may vary.
[9] Requires Windows 7 or higher.
[10] Requires Box registration. Offer available to new Box users only. Box App requires Windows 8 or 8.1. Offer subject to change without notice.
[11] *BIOS Absolute Persistence module is shipped turned off, and will be activated when customers purchase and activate a subscription. Service may be limited. Check with Absolute for availability outside the U.S. The optional subscription service of Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: http://www.absolute.com/company/legal/agreements/computrace-agreement. If Data Delete is utilized, the Recovery Guarantee payment is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either create a PIN or purchase one or more RSA SecurID tokens from Absolute Software.

## AMD® DASH TECHNOLOGY CAPABLE

The DASH standards are designed to assist in the remote management of common desktop infrastructure tasks, such as deploying new operating systems, monitoring of computer system health, power control and power state monitoring, and asset inventory collection. As new hardware technologies are introduced or additional requirements are placed on the IT infrastructure, DASH will continue to evolve to include new functionality.

DASH has been designed to solve many of the pitfalls and constraints of previous management standards by leveraging well-proven technologies from the Service Oriented Architecture domain, advancements in security standards, and extensive modeling of management components, configuration data and relationships first introduced in the server management domain.

DASH is a web services-based management protocol and relies on security and network routing concepts familiar to web site and web **services** administrators.

**Key Features**

- Service availability without the requirement of an installed operating system and/or system power states
- Interoperability between various DASH-capable device implementations and management consoles
- Descriptive data model allowing for the discovery of iterative specification updates (new profiles) or vendor-specific extensions (custom profiles)
- Well understood transport level security (HTTPS basic and digest authentication models with optional TLS client/server certificate support)
- Secured setup with support for multiple DASH users and multiple access roles (administrator, operator, auditor)
- DASH ecosystem can coexist with legacy Alert Standard Format (ASF) infrastructure
- Control boot sources, redirect boot to a redirected USB sessions
- Forward POST logs to specified destination
- Monitor and inventory the HW of the managed clients

**Management Profiles**

A management profile is a specification that defines a normative set of behaviors and characteristics for addressing a particular management domain.

A profile consists of the following information:

- A data model representing the problem domain that consists of objects, properties and methods exposed by the profile
- Use cases to be addressed by the profile
- Steps required to traverse the data model and derive results

When a substantive block of new profiles become available, or fundamental changes are introduced to the DASH ecosystem, the DASH Implementation Requirements document is updated to reflect a new version of the standard. Profiles are continually being developed by the DMTF and DASH is designed to support them as they become available.

### AMD® STANDARD MANAGEABILITY

Includes DASH 1.0/1.1 compliance plus:

- System Defense
- Agent Presence
- SOL/IDE Redirection
- CISCO NAC/SDN support
- ME Wake on LAN
- Host Based Configuration
- ME Firmware Rollback
- IPv6 Support

DASH 1.0/1.1 compliance:

- Boot Control
- HW Inventory
- SW Inventory
- Power State Management
- HW Alerting

| Feature | DMTF Specification(s) |
|---|---|
| Alert Standard Format (ASF 2.0) | DSP0136 |
| DASH Implementation Requirements | DSP0232 |
| System inventory and control | DSP1058, DSP1033, DSP1029, DSP1027, DSP1026, DSP1023, DSP1022, DSP1015, DSP1013, DSP1012, DSP1011 |
| Boot control | DSP1012 |
| User account management | DSP1034, DSP1039 |
| BIOS management | DSP1061 |
| Offline mailboxes/Opaque management data | DSP1070 |
| Indications | DSP1054 |
| In-band NIC management | DSP1014 |
| Sensors | DSP1009 |
| Text console redirection (+Telnet and SSHv2) | DSP1024 |
| Broadcom defined SMBIOS Extensions for Sensors | DSP0134 |
| MCTP / SMBus | DSP0236, DSP0237, DSP0239 |
| PLDM | DSP0240, DSP0241, DSP0245 |
| PLDM for SMBIOS Data Transfer | DSP0246 |
| PLDM for BIOS Control and Configuration | DSP0247 |
| PLDM Numeric Sensors | DSP0248 |
| WMI provider for Ethernet port & SW inventory | DSP1014, DSP1023 |
| WMI provider for User account Mgmt | DSP1034, DSP1039 |
| WMI provider for firmware update | DSP1025 |
| USB redirection (storage media; read only) | DSP1077 |
| Power State management or Power Control (including graceful shutdown | DSP1027 |
| Event logging | DSP1010, DSP8007 |
| Record log audit or security log | DSP1010 |
| WMI provider for Opaque Mgmt data | DSP1070 |
| PLDM Platform Event Messages | DSP0248 |
| Service Processor | DSP1018 |
| Physical Computer System View | in progress |

**ENVIRONMENTAL & INDUSTRY**

ENERGY STAR® qualified models available

EPEAT® registered where applicable. EPEAT registration varies by country. See www.epeat.net for registration status by country.

Industry standard certifications:

UL
CSA
FCC compliance
ENERGY STAR®
EPEAT® Gold*

EUP Lot6 Tier2
CCC
CECP
SEPA
TCO AiO and TCO Edge
Optimized for Microsoft Lync
Low halogen
Arsenic Free
80 PLUS®
TAA compliant

For accessibility information on HP products, please visit: http://www.hp.com/accessibility.

## WEIGHTS & DIMENSIONS

### Weight

| | | | |
|---|---|---|---|
| | | | Height adjustable/reclining stand |
| *Product Weight* | Without stand | Basic stand | 31.6 – 32 lbs |
| *Unboxed* | 17.4 – 17.8 lbs | 22.2 – 22.6 lbs | 14.32 – 14.52 kg |
| | 7.89 – 8.09 kg | 10.06 – 10.26 kg | |
| *Shipping Weight* | | | Height adjustable/reclining stand |
| *Box* | Without stand | Basic stand | 39.38 lbs |
| | 26.06 lbs | 29.23 lbs | 17.86 kg |
| | 11.82 kg | 13.26 kg | |
| | | | Height adjustable/reclining stand (12 units) |
| *Shipping Weight* | Without stand (24 units) | Basic stand (24 units) | 514.38 lbs |
| *Pallet* | 510.41 lbs | 743.49 lbs | 233.32 kg |
| | 231.48 kg | 337.24 kg | |

### Dimensions (W x D x H)

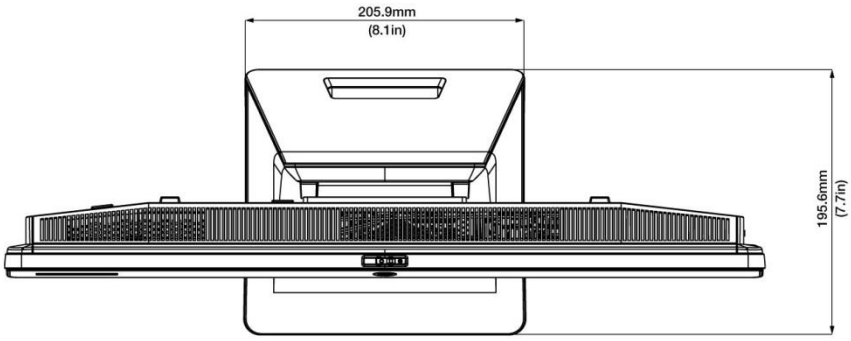
| | | | |
|---|---|---|---|
| | | | Height adjustable/reclining stand 0 degrees |
| *Product Dimensions* | Without stand | Basic stand | 22 x 7.7 x 20.8 in |
| | 22 x 1.98 x 15.3 in | 22 x 6 x 17.2 in | 560 x 194.8 x 528.9 mm |
| | 560 x 50.3 x 389 mm | 560 x 153.4 x 437.2 mm | |
| | | | Height adjustable/reclining stand 60 degrees |
| | | | 22 x 14.6 x 10.5 in |
| | | | 560 x 370.2 x 265.9 mm |

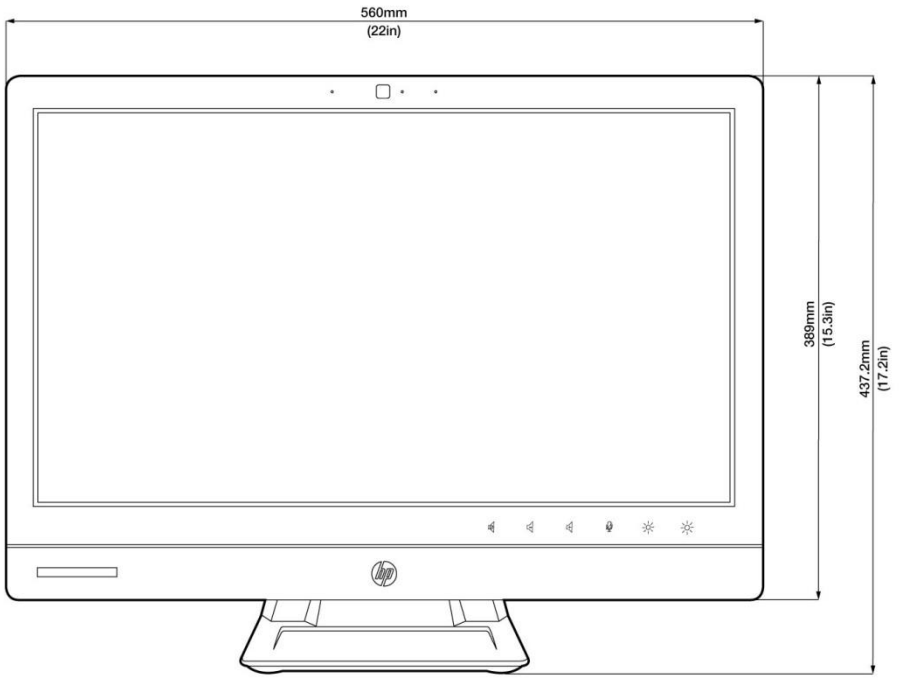
### Shipping Dimensions

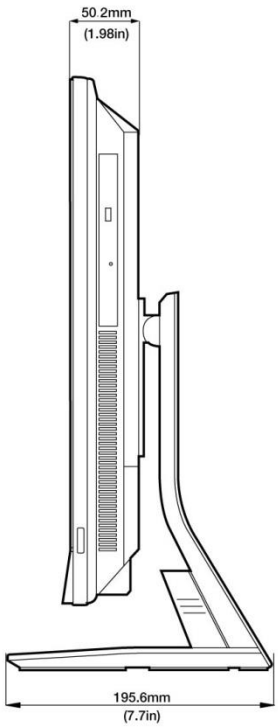
| | | | |
|---|---|---|---|
| | | | Height adjustable/reclining stand |
| *Shipping Dimensions* | Without stand | Basic stand | 26.46 x 12.56 x 21.10 in |
| *Boxed* | 25.83 x 10.59 x 20.39 in | 25.83 x 10.59 x 20.39 in | 672 x 319 x 536 mm |
| | 656 x 269 x 518 mm | 656 x 269 x 518 mm | |
| *Shipping Dimensions* | Without stand (24 units) | Basic stand (24 units) | |
| *Pallet* | 47.24 x 39.37 x 86.30 in | 47.24 x 39.37 x 86.30 in | Height adjustable/reclining stand (12 units) |
| | 1200 x 1000 x 2129 mm | 1200 x 1000 x 2129 mm | |

47.24 x 39.37 x 68.03 in
1200 x 1000 x 1728 mm

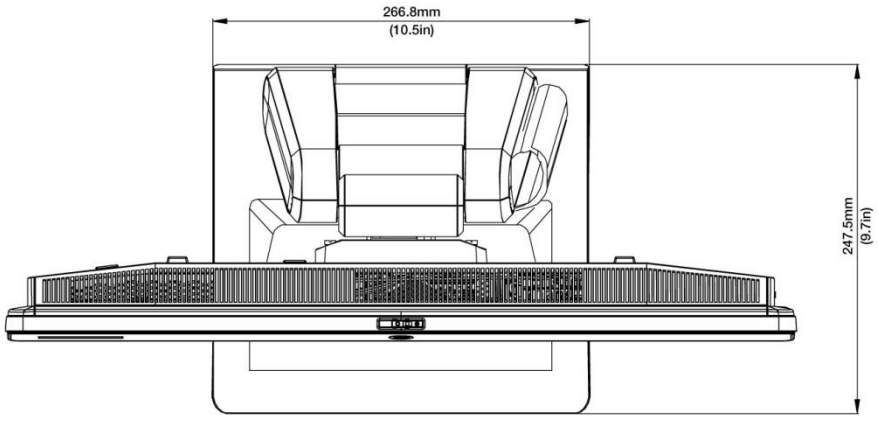
## BASIC STAND DIMENSIONS

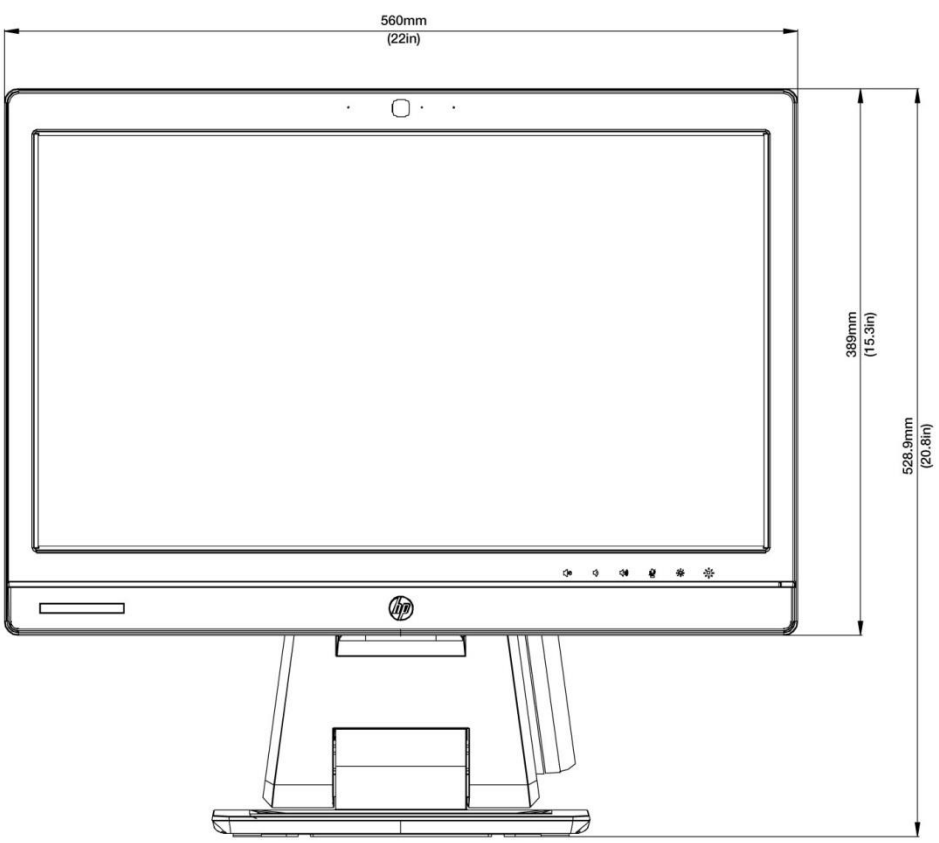


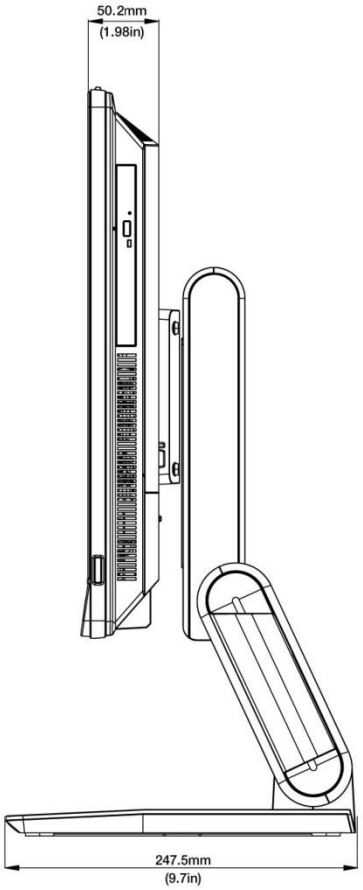



## HEIGHT ADJUSTABLE/RECLINING STAND DIMENSIONS



## TEMPERATURE, HUMIDITY, ALTITUDE

| | | |
|---|---|---|
| **Temperature** | Operating | 50° to 95° F (10° to 35° C)* |
| | Non-operating | –22° to 140° F(–30° to 60° C) |
| **Relative humidity** | Operating | 10% to 90% (non-condensing at ambient) |
| | Non-operating | 5% to 95% (non-condensing at ambient) |
| **Altitude** (unpressurized) | Operating | 10,000 ft (3048 m) |
| | Non-operating | 30,000 ft (9144 m) |

## PORTS

**I/O Ports - Standard**

4 – USB 3.0 (2 side including 1 fast charging, 2 rear)

2 – USB 2.0 (2 rear)

USB Fast Charging Port:

- Up to 2.5A charging current (5 times the maximum current supported by a USB 2.0 port; 2.8 times the maximum current supported by a USB 3.0 port)
- D+/D– CDP/DCP Modes per USB Battery Charging Specification 1.2
- D+/D– Shorted Mode per Chinese Telecommunication Industry Standard YD/T 1591-2009
- Supports non-BC1.2 Charging Modes by Automatic Selection
- D+/D– Divider Modes 2.0V/2.7V and 2.7/2.0V
- D+/D- 1.2V Mode
- Supports Sleep-Mode Charging
- Automatic SDP/CDP Switching for Devices That do not Connect to CDP Ports

2 – PS/2 (legacy) (one keyboard, one mouse)

1 – Microphone in (side)

1 – Headphone jack (side)

1 – Serial RS-232 (rear)

1 – Stereo audio line out (rear)

1 – Power connector (rear)

1 – RJ-45 (rear)

1 – DisplayPort 1.2 supporting up to three (3) external displays

DisplayPort connector supports multimode technology to support connection to DVI-D, HDMI and VGA monitors with optional adapters or to a DisplayPort monitor with a DisplayPort Cable.

| | |
|---|---|
| DisplayPort Cable | Provides a direct connection between the PC's DisplayPort interface to the display's DisplayPort interface |
| DisplayPort To DVI-D Adapter | Provides a connection from the PC's DisplayPort interface to the display's DVI-D interface; adapts the DP output to the DVI-D input |

| | |
|---|---|
| DisplayPort To HDMI Adapter | Provides a connection from the PC's DisplayPort interface to the display's HDMI interface; adapts the DP output to the HDMI input |
| DisplayPort To VGA Adapter | Provides a connection from the PC's DisplayPort interface to the display's analog VGA interface; adapts the digital DP output to the analog VGA input |

## SLOTS

1 – Mini PCIe half-length (used by wireless LAN module)

1 – M.2 PCIe SSD

## BAYS

1 – 2.5" internal; Supports up to Two – 2.5" hard drives (HDD/SSD/SED/SSHD)

1 – 5.25" external; Slim Line Optical Drive

## SERVICE AND SUPPORT

On-site Limited Warranty [1]: Three-year (3-3-3) limited warranty delivers three years of on-site, next business day [2] service for parts and labor and includes free telephone support [3] 24 x 7. Three-year onsite and labor are not available in all countries. Service offers terms up to 5 years by choosing a Care Pack. To choose the right level of service for your HP product, visit HP Care Pack Central: www.hp.com/go/cpc

NOTE 1: Terms and conditions may vary by country. Certain restrictions and exclusions apply. Other warranty variations may be offered in your region.
NOTE 2: On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.
NOTE 3: Technical telephone support applies only to HP-configured Compaq and third-party HP qualified hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.

| **Integrated AMD HD Graphics** | | |
|---|---|---|
| **VGA Controller** | Integrated | |
| **DisplayPort** | • DP++<br>• DisplayPort audio:<br>  ○ Linear PCM, Dolby Digital (AC-3), Dolby TrueHD, DTS, and DTS-HD Master Audio<br>  ○ LPCM at sample rates: 32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, and 192 kHz, Bits per sample: 16, 20, and 24<br>  ○ Supports up to 8 channels<br>• 4, 2, or 1-lane transmission<br>• 5.4 Gbps (HBR2), 2.7 Gbps, and 1.62 Gbps link bit rates<br>• DisplayPort Multi-Stream Transport (MST) for up to four independent video and audio streams on one connector<br>• Maximum resolution of 4096 x 2160 at 30 Hz and 24 bpp (single stream)<br>  ○ Supports 2560 x 1600 at 60 Hz (single stream)<br>  ○ Support for tiled displays with resolution of up to 4096 x 2160 at 60 Hz DisplayPort 1.2 MST<br>Supports stereoscopic 3D gaming, Blu-ray 3D, and stereoscopic 3D video for 120-Hz frame sequential monitors | |
| **Memory** | Allocated at system startup and configurable using F10 setup with values of 128MB, 256MB, 512MB and 1024MB. Additional memory that is not in use by the host will be dynamically allocated and will vary depending on the total installed system memory. | |
| **Maximum Graphics Memory** | Microsoft Windows 7 | Windows 8.1 |
| | Variable* | Variable* |
| | * Actual amount of maximum graphics memory can vary depending on the amount of installed system memory | |
| **Maximum Color Depth** | 32 bits/pixel, 8-bits per color component | |
| **Graphics/Video API Support** | • Discrete-level graphics processor embedded alongside the x86 CPU complex<br>• Dedicated graphics memory controller<br><br>**AMD Eyefinity**<br>AMD Eyefinity support for up to four displays when at least two displays are operating with DisplayPort 1.2 multi-streaming.<br><br>**Power Management**<br>• AMD PowerPlay™ power management technology<br>  ○ Dynamic power gating for GPU, UVD, VCE, GFX, DCE, and Graphics Memory Controller (GMC)<br>• Dynamic refresh rate supported with digital panels that support this feature<br>• Dynamic refresh rate<br>• Frame Buffer Compression<br>• Panel Self-Refresh<br><br>**3D Acceleration Features**<br>DirectX® 11.1 compliant, including full speed 32-bit floating point per component operations: | |

| | |
|---|---|
| | Shader Model 5 geometry and pixel support in a unified shader architecture<br>○ Graphics Core Next (GCN) architecture<br>○ Advanced shader instructions, including flexible flow control with CPU-level flexibility on branching<br>○ Read/Write caching system, replacing texture cache with a unified read-write two-level cache<br>○ Vertex, pixel, geometry, compute, domain, and hull shaders<br>○ 32-bit and 64-bit floating point processing per component<br>○ High performance dynamic branching and flow control<br>○ Shader instruction store, using an advanced caching system<br>○ Advanced shader design, with ultra-threading sequencer for high efficiency operations<br>○ Advanced, high performance branching support, including static and dynamic branching<br>○ High dynamic range rendering with floating point blending, texture filtering, and anti-aliasing support<br>○ 16-bit and 32-bit floating point components for high dynamic range computations<br>○ Full anti-aliasing on render surfaces up to and including 128-bit floating point formats<br>• Support for OpenCL™ 1.2, DirectCompute 11 and Microsoft C++ AMP<br>• Support for OpenGL 4.1/4.1+<br><br>**Motion Video Acceleration Features**<br>• Supports DVD, Blu-ray, and SDTV/HDTV content playback with low CPU usage<br>• Supports stereoscopic 3D Blu-ray<br>• Video compression engine:<br>○ Dedicated hardware (VCE 2.0) assisted encoding of HD video streams to H.264 (main profile)<br>○ Support H.264 SVC temporal scalability<br>○ Real-time transcoding by encoding the output from UVD with reduction of CPU utilization and power consumption<br>• Motion video decode acceleration technology:<br>○ Dedicated hardware (UVD) for H.264, MPEG4, VC-1, MVC, and MPEG2 decode:<br>• H.264 implementation based on the ISO/IEC 14496-10 specification<br>• MPEG**6** implementation based on the ISO/IEC 14496-2 specification<br>• VC-1 implementation based on the SMPTE 421M specification<br>• MPEG2 implementation based on the ISO 13818-2 specification<br>• Multi View Coding (MVC) for Blu-ray 3D content<br>• WMV-9 implementation<br>○ Real time high-definition and standard definition stream decode<br>○ Real time dual high-definition stream decode |

## Introduction:

HP Serial Advanced Technology Attachment (SATA) Hard Drives maximize the performance of HP Business PCs by providing the technologies to meet your increasing storage demands with high-capacity drives offering superior reliability and performance.

SATA provides faster data transfer speeds, better system cooling airflow, more bandwidth, more headroom for speed increases in future generations and better data integrity. A next-generation technology, the SATA interface connects hard drives to the PC platform enabling easy aggregation of multiple hard drives into a single PC. This offers you the additional benefits of dedicated bandwidth, the ability to more easily identify device failures and scalability. The HP EliteOne 705 G1 Series supports the latest SATA 6.0Gb/s specification.

**HP Drive Lock**

HP Serial ATA Hard Drives offer enhanced security via a new Drive Lock. When enabled, this ATA security feature set prevents software access to user data on the drive until one or two user-defined passwords are provided.

**SMART IV Technology**

Self Monitoring Analysis and Reporting Technology (SMART) hard drive technology allows hard drives to monitor their own health and to raise flags if imminent failures are predicted. If the drive determines that a failure is imminent, the SMART hard drive technology enables the intelligent manageability or management software to generate a fault alert. While the current versions of SMART hard drives do a good job monitoring the data on the hard drive media, the ever increasing emphasis on reliability and quality has promoted HP to implement SMART IV technology which constantly checks that the data flow from host interface to media and media to host interface is not compromised. This is accomplished by inserting a 2 byte parity code into every 512 byte block in the data path of the hard drive's Cache RAM. This unique parity checking performed by HP's SMART IV technology hard drives, allows for more complete error detection coverage encompassing the entire data path between the host and the hard drive.

Smart IV is also known as IOEDC: I/O Error Detection Code.

**Native Command Queuing**

NCQ or Native Command Queuing is a SATA protocol extension that allows the hard drive to have several write or read commands outstanding at the same time. In contrast, normal non-queued operation requires each command to be completed before the next command is issued by the host system. Queuing allows the drive to complete the commands in the order that allows for best overall throughput. It also involves an advanced method of transferring data to or from the host, called First Party Direct Memory Access (FPDMA), which allows the hard drive and the host controller to manage the data transfers for multiple outstanding commands, without involving the host processor. NCQ can contribute to better performance but the results are dependent on many factors, including the access patterns of the various applications and operating system functions that are initiating drive accesses. Enabling NCQ features in the hard drive requires AHCI support from the host system BIOS, controller, and driver. AHCI support is typically implemented in RAID configurations.

***NOTE:** For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and 36 GB (for Windows 8.1) of system disk is reserved for the system recovery software.

| **HP 320 GB* 7.2K SATA 6.0Gb/s 2.5" Hard Disk Drive** | | |
|---|---|---|
| **Capacity** | 320,072,933,376 bytes | |
| **Rotational Speed** | 7,200 rpm | |
| **Interface** | SATA 6 Gb/s | |
| **Buffer Size** | 16 MB | |
| **Logical Blocks** | 488,397,168 | |
| **Seek Time** (typical reads, includes controller overhead, including settling) | Single Track: | 2.0 ms |
| | Average: | 12 ms |
| | Full-Stroke: | 22 ms |
| **Height** (nominal) | 0.374 in/9.5 mm | |
| **Width** (nominal) | Media diameter: 2.5 in/63.5 mm | |
| | Physical size: 2.75 in/70 mm | |
| **Operating Temperature** | 41° to 131° F (5° to 55° C) | |

| **HP 500 GB* 7.2K SATA 6.0Gb/s 2.5" Hard Disk Drive** | | |
|---|---|---|
| **Capacity** | 500,107,862,016 bytes | |
| **Rotational Speed** | 7,200 rpm | |
| **Interface** | SATA 6 Gb/s | |
| **Buffer Size** | 16 MB | |
| **Logical Blocks** | 976,773,168 | |
| **Seek Time** (typical reads, includes controller overhead, including settling) | Single Track: | 2.0 ms |
| | Average: | 12 ms |
| | Full-Stroke: | 25 ms |

| | |
|---|---|
| **Height** (nominal) | 0.374 in/9.5 mm |
| **Width** (nominal) | Media diameter: 2.5 in/63.5 mm |
| | Physical size: 2.75 in/70 mm |
| **Operating Temperature** | 41° to 131° F (5° to 55° C) |

| **HP 128 GB* M.2 PCIe SSD** | | |
|---|---|---|
| **Unformatted Capacity** | 128 GB* | |
| **Architecture** | NAND Flash Memory which has a high reliability and a high technology in a small form factor for using a SSD and supporting PCIe interface up to 4 lanes. | |
| **Form Factor** | PCIe SATAe Ultrathin | |
| **Dimensions (Width x Length x Thickness)** | .899 x 3.149 x .146 in (22 x 80 x 3.73 mm) | |
| **Weight** | 0.017 lb (8 g) Max | |
| **Bandwidth Performance -** Performance measured using IOMeter 2008 on Windows 8 64bit. Actual performance may vary depending on use conditions and environment. | Sustained Sequential Read (128KB): | Up to 920 MB/ss |
| | Sustained Sequential Write (128KB): | Up to 430 MB/s |
| | Random Read (4KB): | up to 8500 IOPs |
| | Random Write (4KB): | up to 32000 IOPs |
| **Power** | Allowable voltage | 3.3V ± 5% |
| | Total power consumption: | 5.8 W (Active) ; 80 mW; (Idle) |
| **MTBF** | 1.5 M hours | |
| **Environmental** (all conditions, non-condensing) | Operating Temperature: | 32° to 158° F (0° to 70° C) |
| | Relative Humidity (operating): | 5% to 95% |
| | Shock: | 1,500 G |
| **Regulations** | Safety TUV UL CB c-UL-us | TUV |
| | | UL CB |

| | | |
|---|---|---|
| | | c-UL-us |
| | | TUV |
| | EMC/EMI | CE (EU) |
| | | BSMI (Taiwan) |
| | | KCC (South Korea) |
| | | VCCI (Japan) |
| | | C-Tick (Austrailia) |
| | | FCC (USA) |

* For solid state disk drives, GB means 1 billion bytes. Actual formatted capacity is less. Up to 16GB for Windows 7 and up to 36GB for Windows 8.1 is reserved for system recovery software. ** The product achieves a mean time between failure (MTBF) based on population statistics not relevant to individual units.

| **HP 128 GB* (non-SED) Solid State Drive** | | |
|---|---|---|
| **Unformatted Capacity** | 128 GB* | |
| **Architecture** | Multi Level Cell (MLC) NAND | |
| **Interface** | SATA 6 GB/sec | |
| **Dimensions (W x H x D)** | 2.75 x 0.276 x 3.96 in (6.985 x 0.7 x 10.05 cm) | |
| **Weight** | 0.16 lb (73 g) | |
| **Bandwidth Performance** | Sustained Sequential Read: | Up to 450 MB/ss |
| | Sustained Sequential Write: | Up to 260 MB/s |
| | Random Read (4KB): | up to 46K IOPs |
| | Random Write (4KB): | up to 56K IOPs |
| **Latency** | Read: | 55ms (TYP) |
| | Write: | 55ms (TYP) |
| **Power** | DC power requirement: | Min 4.5 V; Max 5.5 V |
| | Total power consumption: | 160 mW (Active) ; <85 mW; (Idle) |
| **Useful Drive Life** | 1.2 million device hours** | |

| | | |
|---|---|---|
| **Environmental** (all conditions, non-condensing) | Operating Temperature: | 32° to 158° F (0° to 70° C) |
| | Relative Humidity (operating): | 5% to 95% |
| | Shock: | 1,500 G/1.0 msec |
| **Regulations** | UL, CSA, EN 60950-2000, CISPR Pub 22 Class B, CNS 13438, AS/NZS<br>CISPR 22:2002 Class B, Korea KCC, CE Mark | |
| * For solid state disk drives, GB means 1 billion bytes. Actual formatted capacity is less. Up to 16GB for Windows 7 and up to 36GB for Windows 8.1 is reserved for system recovery software.** The product achieves a mean time between failure (MTBF) based on population statistics not relevant to individual units. | | |

| **256 GB* SATA (non-SED) Solid State Drive** | | |
|---|---|---|
| **Unformatted Capacity** | 256 GB* | |
| **Architecture** | Three storage layers:<br>• Volatile cache - DDR DRAM cache<br>• nCache™ - A non-volatile flash write cache<br>• Mass storage – MLC NAND flash | |
| **Form Factor** | SATA 2.5” | |
| **Dimensions (Width x Length x Thickness)** | 2.75 x 3.95 x .27 in (69.85 x 100.5 x 7 mm) | |
| **Weight** | 0.08 lb (36.5 g) | |
| **Bandwidth Performance** | Sustained Sequential Read: | Up to 515 MB/ss |
| | Sustained Sequential Write: | Up to 465 MB/s |
| | Random Read (4KB): | up to 8500 IOPs |
| | Random Write (4KB): | up to 22000 IOPs |
| **Latency** | Read: | 60ms (TYP) |
| | Write: | 65ms (TYP) |
| **Power** | DC power requirement: | 5V ± 5% |
| **Useful Drive Life** | Up to 2 million device hours** | |
| **Environmental** (all conditions, non-condensing) | Operating Temperature: | 32° to 158° F (0° to 70° C) |
| | Relative Humidity (operating): | 5% to 85% |

| | | |
|---|---|---|
| | Shock: | 1,500 G/0.5 ms |
| **Regulations** | FCC Part 15 Class B, IECS-003 Class B, EN 55022 Class B, EN 55024, KCC No. 2008-39, KCC No. 2008-38, CNS 13438 2006 (full version), VCCI: VCCI rules and regulations (latest rev), AS/NZS CISPR 22: 2009 | |
| * For solid state disk drives, GB means 1 billion bytes. Actual formatted capacity is less. Up to 16GB for Windows 7 and up to 36GB for Windows 8.1 is reserved for system recovery software. ** The product achieves a mean time between failure (MTBF) based on population statistics not relevant to individual units. | | |

| **120 GB* SATA 2.5" Self-Encrypting (SED) Solid State Drive** | | |
|---|---|---|
| **Unformatted Capacity** | 120 GB | |
| **Architecture** | Self-Encrypting (SED) Solid State Drive with 20nm MLC NAND Flash and SATA interface | |
| **Form Factor** | 2.5 inch | |
| **NAND Flash** | 20nm MLC NAND Flash | |
| **Height** | .275 in/7mm | |
| **Width** | 2.75 in/69.85 mm | |
| **Length** | 3.95 in/100.5 mm | |
| **Weight** | Up to 0.171 lb (78 g) | |
| **Bandwidth Performance** | Sustained Sequential 128k Read: | Up to 540 MB/s |
| | Sustained Sequential 128k Write: | Up to 480 MB/s |
| | Random 4k Read: | Up to 24K IOPs |
| | Random 4k Write: | Up to 80K IOPs |
| **Latency** | Read: | 80 µs |
| | Write: | 85 µs |
| **Power** | Power consumption: | 195 mW (active average); 125 mW (Non DevSleep Idle) |
| **MTBF** | ≥ 1.2 million hours | |
| **Environmental** (all conditions, non-condensing) | Operating Temperature: | 32° to 158° F (0° to 70° C) |
| | Relative Humidity: | 5% to 95% |

| | | |
|---|---|---|
| | Shock: | 1,500 G/0.5 ms |

| **HP 128 GB* SATA 2.5" Self-Encrypting (SED) Solid State Drive** | | |
|---|---|---|
| **Unformatted Capacity** | 128 GB | |
| **Architecture** | Self-Encrypting (SED) Solid State Drive using NAND Flash and SATA interface | |
| **Interface** | SATA 6 Gb/s | |
| **Height** | .267 in/6.80 mm | |
| **Width** | 2.75 in/69.85 mm | |
| **Length** | 3.94 in/100.2 mm | |
| **Weight** | 0.121 lb (55 g) max | |
| **Performance** | Host Transfer Rate: | 600 MB/s |
| | Sequential Read: | Up to 520 MB/s |
| | Sequential Write: | Up to 340 MB/s |
| | * For hard drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 16GB for Windows 7 and up to 36GB for Windows 8.1 is reserved for system recovery software.<br><br>** Notes :<br>1. Measured at HP 8570p@Win7 x64<br>2. Performance measured using CrystaldiskMark 3.01c<br>3. Drive was connected as primary | |
| **Power** | System power consumption: | Active* - 0.78A / 3.891W (typical) |
| | | Idle** - 0.005A / 0.026W (typical) |
| | * Active power is measured during execution of IOMeter 2006 in Windows 7<br>** Idle power is measured on DOS Idle status with DIPM on | |
| **System Reliability** | MTBF - 1,500,000 Hours | |
| | Operating Temperature: | 32° to 158° F (0° to 70° C) |

| | | |
|---|---|---|
| **Environmental** (all conditions, non-condensing) | Relative Humidity: | 5% to 95% |
| | Shock: | 1500G, duration 0.5ms, Half Sine Wave |

| **180 GB* SATA 2.5" Self-Encrypting (SED) Solid State Drive** | | |
|---|---|---|
| **Unformatted Capacity** | 180 GB | |
| **Architecture** | Self-Encrypting (SED) Solid State Drive with 20nm MLC NAND Flash and SATA interface | |
| **Form Factor** | 2.5 inch | |
| **NAND Flash** | 20nm MLC NAND Flash | |
| **Height** | .275 in/7mm | |
| **Width** | 2.75 in/69.85 mm | |
| **Length** | 3.95 in/100.5 mm | |
| **Weight** | Up to 0.171 lb (78 g) | |
| **Bandwidth Performance** | Sustained Sequential 128k Read: | Up to 540 MB/s |
| | Sustained Sequential 128k Write: | Up to 490 MB/s |
| | Random 4k Read: | Up to 41K IOPs |
| | Random 4k Write: | Up to 80K IOPs |
| **Latency** | Read: | 80 µs |
| | Write: | 85 µs |
| **Power** | Power consumption: | 195 mW (active average); 125 mW (Non DevSleep Idle) |
| **MTBF** | ≥ 1.2 million hours | |
| **Environmental** (all conditions, non-condensing) | Operating Temperature: | 32° to 158° F (0° to 70° C) |
| | Relative Humidity: | 5% to 95% |
| | Shock: | 1,500 G/0.5 ms |

| HP 256 GB* SATA 2.5" Self-Encrypting (SED) Solid State Drive | | |
|---|---|---|
| **Unformatted Capacity** | 256,186,209,271 bytes | |
| **Architecture** | Self-Encrypting (SED) Solid State Drive with 25nm MLC NAND Flash and SATA interface | |
| **Interface** | SATA 6 Gb/s | |
| **NAND Flash** | 25nm MLC NAND Flash | |
| **Height** | .275 in/7mm | |
| **Width** | 2.75 in/69.85 mm | |
| **Length** | 3.95 in/100.5 mm | |
| **Weight** | 0.161 lb (73 g) | |
| **Bandwidth Performance** | Sustained Sequential 128k Read: | Up to 450 MB/s |
| | Sustained Sequential 128k Write: | Up to 260 MB/s |
| | Random 4k Read: | Up to 46K IOPs |
| | Random 4k Write: | Up to 56K IOPs |
| **Latency** | Read: | 55 µs |
| | Write: | 55 µs |
| **Power** | SATA power consumption: | 160 mW (active average); <85 mW (idle average) |
| **Useful Drive Life** | 72TB written, up to 40GB/day for 5 years | |
| **Environmental** (all conditions, non-condensing) | Operating Temperature: | 32° to 158° F (0° to 70° C) |
| | Relative Humidity: | 5% to 95% |
| | Shock: | 1,500 G/1 ms |

* For hard drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 16GB for Windows 7 and up to 36GB for Windows 8.1 is reserved for system recovery software.

| HP 500 GB* 7200 RPM SATA 2.5" Self-Encrypting (SED) Hard Disk Drive | |
|---|---|
| **Capacity** | 500,107,862,016 bytes |

*Technical Specifications – Hard Disk and Solid State Storage*

| | | |
|---|---|---|
| **Rotational Speed** | 7,200 rpm | |
| **Drive Type** | Self-Encrypting Drive (SED) with SATA interface | |
| **Interface** | SATA 6 Gb/s | |
| **Segmented Buffer with write cache** | 32768 KB - A portion of buffer capacity used for firmware | |
| **Number of Sectors** | 976,773,168 | |
| **Seek Time** (typical reads) | Single Track: | 1.0 ms |
| | Average: | 13 ms |
| | Full-Stroke: | 25 ms |
| **Media Diameter** | 2.5 in/63.5 mm | |
| **Height** | 0.267 in/6.8 mm, ±0.2mm | |
| **Width** | 2.75 in/69.85 mm, ±0.25mm | |
| **Length** | 3.945 in/100.2 mm, ±0.25mm | |
| **Weight** | 3.35 oz/95 g (max) | |
| **Operating Temperature** | 32° to 140° F (0° to 60° C) | |

* For hard drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 16GB for Windows 7 and up to 36GB for Windows 8.1 is reserved for system recovery software.

| **HP 500 GB* SATA 6G 2.5" 8GB Solid State Hybrid Drive (SSHD)** | |
|---|---|
| **Formatted Capacity** | 500 GB |
| **Spindle Speed** | 5,400 rpm +/- 0.2% |
| **Drive Type** | Solid State Hybrid Drive (SSHD) technology with NAND Flash |
| **Interface** | SATA 6 Gb/s |
| **Cache Buffer** | 64 MB |

| | | |
|---|---|---|
| **NAND Flash Commercial Multilevel Cell (cMLC)** | 8 GB | |
| **Number of Sectors** | 976,773,168 | |
| **Seek Time** (typical reads) | Single Track: | 2.0 ms |
| | Average: | 12 ms |
| **Height** | 0.268 +/-.008 in (6.8 +/- 0.2 mm) | |
| **Width** | 2.750 +/- 0.010 in (69.85 +/- 0.25 mm) | |
| **Length** | 3.951 +0.008 / -0.010 in (100.35 +0.20 / -0.25 mm) | |
| **Weight** | 0.209 lb/95 g (max) | |
| **Operating Temperature** | 32° to 140° F (0° to 60° C) | |

* For hard drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 16GB for Windows 7 and up to 36GB for Windows 8.1 is reserved for system recovery software.

| **HP 1 TB* SATA 6G 2.5" 8GB Solid State Hybrid Drive (SSHD)** | | |
|---|---|---|
| **Formatted Capacity** | 1 TB | |
| **Spindle Speed** | 5,400 rpm +/- 0.2% | |
| **Drive Type** | Solid State Hybrid Drive (SSHD) technology with NAND Flash | |
| **Interface** | SATA 6 Gb/s | |
| **Cache Buffer** | 64 MB | |
| **NAND Flash Commercial Multilevel Cell (cMLC)** | 8 GB | |
| **Number of Sectors** | 976,773,168 | |
| **Seek Time** (typical reads) | Single Track: | 2.0 ms |
| | Average: | 12 ms |

*Technical Specifications – Hard Disk and Solid State Storage*

| | |
|---|---|
| **Height** | 0.374 +/-.008 in (9.5 +/- 0.2 mm) |
| **Width** | 2.750 +/- 0.010 in (69.85 +/- 0.25 mm) |
| **Length** | 3.951 +0.008 / -0.010 in (100.35 +0.20 / -0.25 mm) |
| **Weight** | 0.254 lb/115 g (max) |
| **Operating Temperature** | 32° to 140° F (0° to 60° C) |

For hard drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 16GB for Windows 7 and up to 36GB for Windows 8.1 is reserved for system recovery software.

| **HP Slim SuperMulti DVD Writer Drive*** | | |
|---|---|---|
| **Height** | 12.7mm height | |
| **Orientation** | Either horizontal or vertical | |
| **Interface type** | SATA/ATAPI | |
| **Disc recording capacity** | Up to 8.5 GB DL or 4.7 GB standard | |
| **Dimensions** (W x H x D) | 5.0 x 0.5 x 5.0 in (128 x 13.6 x 129 mm) | |
| **Weight** | 0.42 lb (190 g) | |
| **Write speeds** | DVD-RAM | Up to 5X |
| | DVD-R DL | Up to 6X |
| | DVD+R | Up to 8X |
| | DVD+RW | Up to 8X |
| | DVD+R DL | Up to 6X |
| | DVD-R | Up to 8X |
| | DVD-RW | Up to 6X |
| | CD-R | Up to 24X |
| | CD-RW | Up to 24X |
| **Read speeds** | DVD-RAM | Up to 5X |
| | DVD-RW, DVD+RW | Up to 8X |
| | DVD-R DL, DVD+R DL | Up to 8X |
| | DVD+R, DVD-R | Up to 8X |
| | DVD-ROM DL, DVD-ROM | Up to 8X |
| | CD-ROM, CD-R | Up to 24X |
| | CD-RW | Up to 24X |
| | Random | DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical) |

| | | |
|---|---|---|
| | Full Stroke | DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical) |
| | Stop Time | 6 seconds typical |
| | | |
| | | |
| **Power** | Source | Slimline SATA DC power receptacle |
| | DC Power Requirement | 5 VDC ± 5%-100 mV ripple p-p |
| | DC Current | |
| | | 5 VDC (< 1000 mA typical, 1600 mA maximum) |
| | | |
| | | |
| | | |
| | | |
| **Environmental conditions** (operating - non-condensing) | Temperature | 41° to 122° F (5° to 50° C) |
| | Relative Humidity | 10% to 90% |
| | Maximum Wet Bulb Temperature | 84° F (29° C) |

| **HP Slim Blu-ray BDXL Drive*** | | | |
|---|---|---|---|
| **Height** | 12.7mm height | | |
| **Orientation** | Either horizontal or vertical | | |
| **Interface type** | SATA/ATAPI | | |
| **Disc recording capacity** | Up to 128 GB QL, 100 GB TL, 50 GB DL or 25 GB standard SL | | |
| **Dimensions** (W x H x D) | 5.04 x 0.5 x 5.0 in (128 x 12.7 x 127 mm) without bezel | | |
| **Weight** (max) | Up to 0.37 lb (170 g) without bezel | | |
| | | **Triple-layer** | **Quadruple-layer** |

| | | | |
|---|---|---|---|
| **Write speeds** | BD-R | Up to 4X | Up to 4X |
| | BD-RE | Up to 2X | Not supported |
| | | **Single-layer** | **Double-layer** |
| | BD-R | Up to 6X | Up to 6X |
| | BD-RE | Up to 2X | Up to 2X |
| | | | |
| | DVD-R | Up to 8X | Up to 6X |
| | DVD-RW | Up to 6X | Not supported |
| | DVD+R | Up to 8X | Up to 6X |
| | DVD+RW | Up to 8X | Not supported |
| | DVD-RAM | Up to 5X | N/A |
| | CD-R | Up to 24X | N/A |
| | CD-RW | Up to 24X | N/A |
| | | | |
| | | **Triple-layer** | **Quadruple-layer** |
| | BD-R | Up to 4X | Up to 4X |
| | BD-RE | Up to 4X | Not supported |
| | | **Single-layer** | **Double-layer** |
| | BD-ROM | Up to 6X | Up to 6X |
| | BD-R | Up to 6X | Up to 6X |
| **Read speeds** | BD-RE | Up to 6X | Up to 6X |
| | DVD-ROM | Up to 8X | Up to 8X |
| | DVD-R | Up to 8X | Up to 8X |
| | DVD-RW | Up to 8X | N/A |
| | DVD+R | Up to 8X | Up to 8X |

| | | | |
|---|---|---|---|
| | DVD+RW | Up to 8X | N/A |
| | BDMV (AACS Compliant Disc) | Up to 6X/2X (Read/Play) | N/A |
| | DVD-RAM | Up to 5X | N/A |
| | DVD-Video (CSS Compliant Disc) | Up to 8X/4X (Read/Play) | N/A |
| | CD-R/RW/ROM | Up to24X | N/A |
| | CD-DA(DAE) | Up to 20X/10X (Read/Play) | N/A |
| **Access time** (typical reads, including settling) | Random | BD-ROM: 205 ms (typical), DVD-ROM: 185 ms (typical), CD-ROM: 165 ms (typical) | |
| | Full Stroke | BD-ROM: 350 ms (typical), DVD-ROM: 345 ms (typical), CD-ROM: 340 ms (typical) | |
| **Power** | Source | Slimline SATA DC power receptacle | |
| | DC Power Requirement | 5 VDC ± 5%-100 mV ripple p-p | |
| | DC Current | 5 VDC -1200 mA typical, 2000 mA maximum | |
| **Environmental conditions** (operating - non-condensing) | Temperature | 41° to 122° F (5° to 50° C) | |
| | Relative Humidity | 10% to 80% | |
| | Maximum Wet Bulb Temperature | 84° F (29° C) | |

| **HP Slim DVD-ROM Drive*** | | |
|---|---|---|
| **Height** | 12.7mm | |
| **Orientation** | Either horizontal or vertical | |
| **Interface type** | SATA/ATAPI | |
| **Dimensions** (W x H x D) | 5.04 x 0.5 x 5.0 in (128 x 12.7 x 127 mm) without bezel | |
| **Weight** (max) | Up to 0.37 lb (170 g) without bezel | |
| **Read speeds** | DVD+R/-R/+RW/ -RW/+R DL /-R DL | Up to 8X |

*Technical Specifications – Removable Storage*

| | | |
|---|---|---|
| | DVD-ROM | Up to 8X |
| | CD-ROM, CD-R | Up to 24X |
| | CD-RW | Up to 24X |
| **Access time** (typical reads, including settling) | Random | DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical) |
| | Full Stroke | DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical) |
| | | |
| **Power** | Source | Slimline SATA DC power receptacle |
| | DC Power Requirement | 5 VDC ± 5%-100 mV ripple p-p |
| | DC Current | 5 VDC - <1000 mA typical, < 1600 mA maximum |
| **Environmental** (all conditions non-condensing) | Temperature | 41° to 122° F (5° to 50° C) |
| | Relative Humidity | 10% to 80% |
| | Maximum Wet Bulb Temperature (operating) | 84° F (29° C) |

*Duplication of copyrighted material is strictly prohibited. Actual speeds may vary. Double Layer media compatibility will widely vary with some home DVD players and DVD-ROM drives. Note that DVD-RAM cannot read or write to 2.6GB Single Sided/5.2 Double Sided-Version 1.0 Media.

## System Memory Support

The HP EliteOne 705 G1 All-in-One Business PC supports the AMD® A-Series PRO processor family. Based on a new PC micro-architecture, the processor is designed for a two-chip platform consisting of a processor and Fusion Controller Hub (FCH). The processor includes an integrated memory controller (IMC). The IMC supports DDR3 protocols with two independent, 64-bit wide channels each accessing one SODIMM.

- Two channels of non-ECC DDR3 unbuffered small outline dual in-line memory modules (SODIMM) with a maximum of one SODIMM per channel
- Single-channel and dual-channel memory organization modes
- Data burst length of eight for all memory organization modes
- DDR3 memory data transfer rates of up to 1600 MT/s; actual supported DDR3 data transfer rate determined by the configured processor
- 64-bit wide channels
- DDR3 system memory I/O voltage of 1.5V and 1.35V
- Theoretical Maximum Memory Bandwidth:
  - 10.6 GB/s in single-channel mode of 21.3 GB/s in dual-channel mode assuming DDR3 1333 MT/s
  - 12.8 GB/s in single-channel mode or 25.6 GB/s in dual-channel mode assuming DDR3 1600 MT/s
  - 16 GB maximum memory support

**CAUTION:** You must shut down the computer and disconnect the power cord before adding or removing memory modules. Regardless of the power-on state, voltage is always supplied to the memory modules as long as the computer is plugged in to an active AC outlet. Adding or removing memory modules while voltage is present may cause irreparable damage to the memory modules or system board.

## Memory Configurations:

Slot 1 must always be populated. Not all memory configurations possible are represented below.

**NOTE:** For systems configured with more than 3 GB of memory and a 32-bit operating system, all memory may not be available due to system resource requirements. Addressing memory above 4 GB requires a 64-bit operating system.

| Total Memory | Socket | |
|---|---|---|
| | Channel A (black) | Channel B (black) |
| **4 GB** | 4 GB | Unpopulated |
| **8 GB (dual channel)** | 4 GB | 4 GB |
| **8 GB** | 8 GB | Unpopulated |
| **16 GB (dual channel)** | 8 GB | 8 GB |

| **Broadcom NetXtreme Gigabit Ethernet Plus Gigabit Network Connection** (integrated) | | |
|---|---|---|
| **Connector** | RJ-45 | |
| **System Interface** | Integrated on PCA | |
| **Controller** | Broadcom BCM5762 GbE | |
| **Memory** | 24 KB FIFO packet buffer memory Two Queues (Tx & Rx) | |
| **Data rates supported** | 10/100/1000 Mbps | |
| **IEEE Compliance** | 802.1P<br>802.1Q<br>802.1as/1588<br>802.3<br>802.3ab<br>802.3az<br>802.3u | |
| **Bus architecture** | PCI Express and SMBus | |
| **Data transfer mode** | PCIe-based interface for active state operation (S0 state) and SMBus for host and management traffic (Sx low power state) | |
| **Power requirement** | Requires 3.3Vdc with integrated regulators<br>Thermal Design Power (TDP) 0.535 Watts | |
| **Boot ROM support** | Yes | |
| **Network transfer mode** | Full-duplex | |
| | Half-duplex (not supported for the 1000BASE-T transceiver) | |
| **Network transfer rate** | 10BASE-T (half-duplex) 10 Mbps | |
| | 10BASE-T (full-duplex) 20 Mbps | |
| | 100BASE-TX (half-duplex) 100 Mbps | |
| | 100BASE-TX (full-duplex) 200 Mbps | |
| | 1000BASE-T (full-duplex) 2000 Mbps | |
| **Environmental** | Operating Temperature: | 0° to 85° C |

| | | |
|---|---|---|
| | Operating Humidity: | 60**%** RH |
| **Management** | WOL, auto MDI crossover, PXE, Muti-port teaming, RSS, Advanced cable diagnostic, Smart speed operation | |
| **Alerting** | ASF 2.0 support; AMT 7.0 support | |

| **HP WLAN 802.11a/b/g/n Wireless 2x2 Dual-Band Minicard with Bluetooth Combo** | | |
|---|---|---|
| **Dimensions** (L x H) | 1.18 x 1.06 in (30 x 26.8 mm) | |
| **Chipset** | Atheros AR9462 | |
| **System interface** | PCI-Express Mini Card | |
| **Network standard** | 802.11 a/b/g/n | |
| **Frequency band** | Bluetooth: 2.402 - 2.480 GHz | |
| | Wi-Fi:<br>802.11a/n – 4.9 – 4.95 GHz (Japan), 5.15 – 5.25 GHz, 5.25 – 5.35 GHz, 5.47 – 5.725 GHz, 5.825 – 5.850 GHz<br>802.11b/g/n 2.402-2.482 GHz | |
| **Bluetooth** | The WLAN + Bluetooth Combo Mini Card meets all of the requirements to support Bluetooth 4.0 and is backwards compatible with 2.1 with EDR and 3.0 High speed. | |
| **Operating temperature** | 14° to 158°F, operating (-10° to 70°C, operating) | |
| **Storage temperature** | -40° to 176°F, non-operating (-40° to 80°C, non-operating) | |
| **Humidity** | 10-90% operating<br>5-95% non-operating | |
| **Operating voltage** | 3.3 V ±9% I/O supply voltage | |
| **Power Consumption** | **Platform/WLAN Mode** | **Power Consumption** |
| | **Wi-Fi** | |
| | Transmit Mode | 2 W |

| | | |
|---|---|---|
| | Receive Mode | 1.6 W |
| | Idle mode (PSP)<br>(WLAN Associated) | 250mW |
| | Idle mode<br>(WLAN unassociated) | 100mW |
| | Radio disabled | 75mW |
| | **Bluetooth** | |
| | Peak Operating | 330 mW |
| | Receive | 230 mW |
| | USB Selective Suspend | 17 mW |
| **Output Power** | 2.4G: +13.5dBm minimum | |
| | 5G: +12dBm minimum | |
| **Security** | IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only | |
| | 802.1x authentication | |
| | WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES | |
| | IEEE 802.11i | |
| | Cisco Certified Extensions, all versions through V5 | |
| | WAPI | |
| **Antenna** | Dual antenna connectors | |

| **Intel 7260 802.11 a/b/g/n PCIe x1 WLAN Card *** | |
|---|---|
| **Dimensions** (L x H) | 0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm) |
| **Chipset** | Atheros AR9462 |
| **System interface** | PCI-Express Mini Card |

| | | |
|---|---|---|
| **Network standard** | 802.11 a/b/g/n | |
| **Frequency band** | Wi-Fi:<br>802.11a/n – 4.9 – 4.95 GHz (Japan), 5.15 – 5.25 GHz, 5.25 – 5.35 GHz, 5.47 – 5.725 GHz, 5.825 – 5.850 GHz<br>802.11b/g/n 2.402-2.482 GHz | |
| **Operating temperature** | 14° to 158°F, operating (-10° to 70°C, operating) | |
| **Storage temperature** | -40° to 176°F, non-operating (-40° to 80°C, non-operating) | |
| **Humidity** | 10-90% operating<br>5-95% non-operating | |
| **Operating voltage** | 3.3 V ±9% I/O supply voltage | |
| **Power Consumption** | **Platform/WLAN Mode** | **Power Consumption** |
| | **Wi-Fi** | |
| | Transmit Mode | 2 W |
| | Receive Mode | 1.6 W |
| | Idle mode (PSP)<br>(WLAN Associated) | 250mW |
| | Idle mode<br>(WLAN unassociated) | 100mW |
| | Radio disabled | 75mW |
| **Output Power** | 2.4G: +13.5dBm minimum | |
| | 5G: +12dBm minimum | |
| **Security** | IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only | |
| | 802.1x authentication | |
| | WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES | |

| | |
|---|---|
| | IEEE 802.11i |
| | Cisco Certified Extensions, all versions through CCX4 and CCX Lite |
| | WAPI |
| **Antenna** | 2 transmit; 2 receive (2x2) |
| * Wireless access point and Internet service required and not included. Availability of public wireless access points limited. | |

| **Near Field Communications Controller, with Embedded Secure Element** | |
|---|---|
| **Dimensions** (L x W x H) | Module 10mm by 17mm by 1.8mm |
| **Chipset** | NXP PN65O (PN544C3 and P5CN145 dies in a single VFBGA64 package) |
| **System interface** | $I^2C$ |
| **NFC RF standards** | ISO/IEC 14443 A<br>ISO/IEC 14443 B<br>ISO/IEC 15693<br>ISO/IEC 18092<br>ECMA-340 NFCIP-1 Target and Initiator<br>ECMA-320 NFCIP-2 |
| **NFC Forum Support** | Tag Type 1, Type 2, Type3 and Type 4, NFCIP-1 and NFCIP-2 |

| | |
|---|---|
| **Reader (PCD-VCD) Mode[1]** | ISO/IEC 14443 A<br>ISO/IEC 14443 B<br>ISO/IEC 15693<br>MIFARE 1K<br>MIFARE 4K<br>FeliCa |
| **Card Emulation (PICC-VICC) Mode[1]** | ISO/IEC 14443 A<br>ISO/IEC 14443 B and B'<br>MIFARE<br>FeliCa |
| **Frequency** | 13.56 MHz |
| **NFC Modes Supported** | Reader/Writer, Peer-to-Peer, Card Emulation |
| **Raw RF Data Rates** | 106, 212, 424 kbps |
| **Embedded Secure Element** | 144 KB EEPROM, Data Memory or Program Memory<br>264 KB User ROM<br>7.5 KB RAM<br>PKI (Public Key Infrastructure) coprocessor<br>Dual Triple DES Key coprocessor<br>NFC-WI interface to NFC controller, PN544<br>MIFARE 4 KB card emulation<br>EEPROM data retention time 20 years, minimum |
| **Operating temperature** | 0°C to 70°C |
| **Storage temperature** | -40° to 80°C |
| **Humidity** | 10-90% operating<br>5-95% non-operating |
| **Supply Operating voltage** | 2.97 to 5.25 Volts |
| **I/O Voltage** | 1.8V or 3.3V |

| | | |
|---|---|---|
| **Power Consumption (Supply 3.3 Volts)** | **Mode** | **Power Consumption, Typical(2)** |
| | Reset | 10 µW |
| | Standby | 150 µW |
| | Card Emulation within Polling Loop | 297 µW |
| | When generating RF | 120 mW |
| | Transmitter Supply Current (Continuous wave) | 30 mA |
| **Antenna** | Antenna connector, 0.5mm pitch, 5 connector FPC. Antenna matching is external to module. | |

(1) With application or UICC support
(2) Actual Power Consumption is dependent on NFC antenna and matching circuit and on the particular polling sequence and period configured.

| Realtek ALC3228 High Definition Audio | |
|---|---|
| **Type** | Integrated |
| **HD Stereo Codec** | Realtek ALC3228 4-channel codec |
| **Ports** | Line-In/Microphone input ports are 47K (nominal) at the pin |
| | Line-Out intended to drive an external 10K load (nominal) and an on board shunt resistor of 20-47K (nominal) |
| | Headphone-Out designed to drive 32 ohm (nominal) headphones or a 10K (nominal) load |
| | All ports are 3.5 mm |
| **Internal Speaker Amplifier** | 2.2W/channel Class-D stereo BTL speaker amplifier@ 4 ohms and 5V |
| **Sampling** | The ALC3228 audio CODEC provides stereo 24- bit, full duplex resolution supporting sample rates up to 192kHz by the DAC and ADC. Additional sample rates are supported by the driver software. |
| **Analog Audio** | Yes |
| **# of Channels on Line-Out** | 4 Channels (2 stereo DACs and 2 stereo ADCs) with 24-bit resolution |
| **Internal Speaker** | Yes |

| DTS Studio Sound Technology | |
|---|---|
| **Introduction** | **DTS Studio Sound** provides the ultimate audio and entertainment experience for all PC applications related to music, movies and games. Utilizing DTS' revolutionary 3D audio technology, DTS Studio Sound provides the most immersive and realistic listening experience unlike any solution ever offered for a two speaker playback environment. DTS Studio Sound offers a wider surround effect and significantly more natural positioning of audio for both 2D and 3D content and delivers immersive surround complete with deep, rich enveloping bass and crystal clear dialog. It also delivers high-frequency definition for crisp detail in any listening environment, ensuring users a premium and natural entertainment experience across any speaker configuration (desktop speakers or headphones). |

| | |
|---|---|
| **DTS Studio Sound Features** | • The ultimate multimedia audio experience<br>• Immersive surround sound from two speakers or headphones<br>• Extracts acoustic placement cues from original audio signal and adds near and far depth to the sound field to maximize 3D surround effect<br>• Custom-tuned solutions to provide superior natural sound from desktop speakers and headphones<br>• Maximum volume from small speakers<br>• Deep, rich bass and crystal clear dialog<br>• Intuitive user interface with presets for ease of use |
| **DTS Studio Sound Benefits** | • Provides a remarkably immersive 3D surround sound experience for business multimedia applications, complete with deep, rich enveloping bass, and crystal clear dialog<br>• Ability to personalize acoustic preferences with speaker and headphone optimization |

| **HP USB Keyboard** | | |
|---|---|---|
| **Physical characteristics** | Keys | 104, 105, 106, 107, 109 layout (depending upon country) |
| | Dimensions (L x W x H) | 18.12 x 6.47 x 0.96 in (46.03 x 16.43 x 2.44 cm) |
| | Weight | 2 lb (0.9 kg) |
| **Electrical** | Operating voltage | + 5VDC ± 5% |
| | Power consumption | 50-mA maximum (with three LEDs ON) |
| | System interface | USB Type A plug connector |
| | ESD | CE level 4, 15-kV air discharge |
| | EMI - RFI | Conforms to FCC rules for a Class B computing device |
| | Microsoft® PC 99 - 2001 | Functionally compliant |
| **Mechanical** | Keycaps | Low-profile design |
| | Switch actuation | 55-g nominal peak force with tactile feedback |
| | Switch life | 20 million keystrokes (using Hasco modified tester) |
| | Switch type | Contamination-resistant switch membrane |
| | Key-leveling mechanisms | For all double-wide and greater-length keys |
| | Cable length | 6 ft (1.8 m) |
| | Microsoft PC 99 - 2001 | Mechanically compliant |
| **Environmental** | Acoustics | 43-dBA maximum sound pressure level |
| | Operating temperature | 50° to 122° F (10° to 50° C) |
| | Non-operating temperature | -22° to 140° F (-30° to 60° C) |
| | Operating humidity | 10% to 90% (non-condensing at ambient) |
| | Non-operating humidity | 20% to 80% (non-condensing at ambient) |

| | | |
|---|---|---|
| | Operating shock | 40 g, six surfaces |
| | Non-operating shock | 80 g, six surfaces |
| | Operating vibration | 2-g peak acceleration |
| | Non-operating vibration | 4-g peak acceleration |
| | Drop (out of box) | 26 in (66 cm) on carpet, six-drop sequence |
| | Drop (in box) | 30 in (76.2 cm) on concrete, 16-drop sequence |
| **Approvals** | UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, KC | |
| **Ergonomic compliance** | ANSI HFS 100, ISO 9241-4, and TUVGS | |
| **Kit contents** | Keyboard | Installation Guide |
| | Warranty Card | Safety and Comfort Guide |

| **HP PS/2 Keyboard** | | |
|---|---|---|
| **Physical Characteristics** | Keys | 104, 105, 106, 107, 109 layout (depending upon country) |
| | Dimensions (L x W x H) | 18.22 x 6.47 x 1.1 in (46.28 x 16.43 x 2.79 cm) |
| | Weight | 2 lb (0.9 kg) minimum |
| **Electrical** | Operating voltage | + 5VDC ± 10% |
| | Power consumption | 50-mA maximum (with three LEDs ON) |
| | System interface | PS/2 6-pin mini din connector |
| | ESD | CE level 4, 15-kV air discharge |
| | EMI - RFI | Conforms to FCC rules for a Class B computing device |
| | Microsoft PC 99 - 2001 | Functionally compliant |
| | Keycaps | Low-profile design |
| | Switch actuation | 55-g nominal peak force with tactile feedback |

| | | |
|---|---|---|
| | Switch life | 20 million keystrokes (using Hasco modified tester) |
| | Switch type | Contamination-resistant switch membrane |
| | Key-leveling mechanisms | For all double-wide and greater-length keys |
| | Cable length | 6 ft (1.8 m) |
| | Microsoft PC 99 - 2001 | Mechanically compliant |
| **Environmental** | Acoustics | 50-dBA maximum sound pressure level |
| | Operating temperature | 32° to 104° F (0° to 40° C) |
| | Non-operating temperature | -22° to 149° F (-30° to 65° C) |
| | Operating humidity | 15% to 80% (non-condensing at ambient) |
| | Non-operating humidity | 15% to 90% (non-condensing at ambient) |
| | Operating shock | N/A |
| | Non-operating shock | 65 inch 2.9 ms, six surface; 30g 266 inch/second; 50g 266 inch/second six surface |
| | Operating vibration | 2-g peak acceleration |
| | Non-operating vibration | Starting at 5 Hz, vary the frequency of vibration from 5 to 500 Hz and back to 5 Hz at a Logarithmic sweep rate of 1 octave per minute. |
| | Drop (out of box) | 26 in (66 cm) on carpet, six-drop sequence |
| | Drop (in box) | 29.93 in (76 cm) on concrete, 16-drop sequence |
| **Approvals** | CUL, ICES-003 Class B, FCC, CE Mark,TUV GS, VCCI, BSMI, C-Tick, KC | |
| **Ergonomic compliance** | ANSI HFS 100, ISO 9241-4, and TUVGS | |

## HP USB Smart Card (CCID) Keyboard

### Introduction:

Boost your security, simplify access procedures and reduce the costs associated with managing networks by preventing unauthorized access to your computers and networks using smartcard technology with the HP Smart Card (CCID) Keyboard.

The USB Smart Card (CCID) Keyboard is a full-sized keyboard that takes advantage of digital signatures and certificates to secure the environment for transactions performed on both public and private networks. The USB Smart Card (CCID) Keyboard works with all smart cards that comply with ISO standard 7816.

Smart cards are easy-to-use credit card-sized devices which require multiple forms of information to be validated before you gain access to your accounts or resources. Used worldwide, smart cards strengthen access to a network or other resource using dual-factor authentication. Implementing a two-factor authentication (or multi-factor authentication) process reduces the risk of unauthorized access by verifying and validating your identity in one of the following ways:

- Something you know - a combination of username and password or PIN
- Something you have - a smart card or security token.

Something you have (smart card) plus something you know (PIN), improves user-access security within corporate network environments. Smart cards are used in government agencies, healthcare companies and the finance industry.

HP ProtectTools Smart Card Manager provides authentication software for the smart card. The Smart Card Reader module works with the HP ProtectTools Security Manager and enables the user to setup, use, and manage the smart card. This allows strengthened security with HP patented technology.

| | | |
|---|---|---|
| **Key Benefits:** | • Protects against unauthorized access with smart card technology<br>• Delivers even greater security when combined with a HP ProtectTools smart card and the HP ProtectTools Security Software<br>• Combination of username and password or pin with a smart card or security token<br>• Secures online transactions using digital signatures and certificates<br>• Conforms to industry standards for ease of setup and use<br>• Delivers long product life and quiet operation with high-impact materials and lubricated keys<br>• Spill drain feature | |
| **Physical Characteristics** | Keys | 104, 105, 106, 107, 109 layout (depending upon country |
| | Form factor | USB basic smart card keyboard |
| | Colors | Carbonite/Silver |
| | Dimensions (H x W x D) | 18.2 x 6.3 x 1.3 in (46.3 x 16.1 x 3.3 cm) |

| | | |
|---|---|---|
| | Weight | 2 lb (0.9 kg) minimum |
| **Electrical** | Operating voltage | + 5VDC ± 5% |
| | Power consumption | 100-mA maximum (with four LEDs ON) |
| | System interface | USB Type A plug connector |
| | ESD | CE level 4, 15-kV air discharge |
| | EMI - RFI | Conforms to FCC rules for a Class B computing device |
| | Microsoft PC 99 - 2001 | Functionally compliant |
| **Mechanical** | Languages | 30+ available |
| | Keycaps | Standard design |
| | Switch actuation | 55 g nominal peak force with tactile feedback |
| | Switch life | 20 million keystrokes<br>(using Hasco modified tester) |
| | Switch type | Contamination-resistant membrane |
| | Key-leveling mechanisms | For all double-wide and greater-length keys |
| | Cable length | 6 ft (1.8 m) |
| | Microsoft PC 99 - 2001 | Mechanically compliant |
| **Environmental** | Acoustics | 43-dBA maximum sound pressure level |
| | Operating temperature | 50° to 122° F (10° to 50° C) |
| | Non-operating temperature | -22° to 140° F (-30° to 60° C) |
| | Operating humidity | 10% to 90% (non-condensing at ambient) |
| | Non-operating humidity | 20% to 80% (non-condensing at ambient) |
| | Operating shock | 40 g, six surfaces |
| | Non-operating shock | 80 g, six surfaces |
| | Operating vibration | 2-g peak acceleration |

| | | | |
|---|---|---|---|
| | Non-operating vibration | 4-g peak acceleration | |
| | Drop (out of box) | 26 in (66 cm) on carpet, six-drop sequence | |
| | Drop (in box) | 42 in (107 cm) on concrete, 16-drop sequence | |
| **SmartCard Function** | Support | All ISO 7816 smart cards | |
| | Interface | Reads from and writes to all ISO7816-1, 2, 3, 4 memory and microprocessor smart cards (T=0, T=1) | |
| | Chipset | SCM STCII | |
| | Standard APIs supported | PC/SC, EMV2000, SET | |
| | Power | USB Port | |
| | | Short circuit detection (protects smart card and reader) | |
| | | Power supply compliant with ISO7816 and EMV (5V, 60 mA) | |
| | | Supports 3-V and 5-V cards | |
| | Power consumption | 100-mA maximum draw | |
| | Communication | From card | 9600 bps to 330,000 bps |
| | | From computer | 12 Mbps (USB transfer speed) |
| | Landing mechanism | Contact device | Friction contact |
| | | Card insertions rating | Up to 100,000 insertion cycles |
| | Interface modes | CCID protocol | |
| | Reader performance interface | USB connection | |
| | Electro-magnetic standards | Europe | 2004/108/EC |
| | | USA | USAFCC part 15 |
| **Approvals** | CE-Mark, UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC, EMV2000, USB-IF | | |

| | |
|---|---|
| **Ergonomic Compliance** | ISO 9241-4, TUVGS |
| **Kit Contents** | Keyboard, I/O Security and Documentation CD, warranty card |

| **HP USB PS/2 Washable Keyboard** | | |
|---|---|---|
| **Physical Characteristics** | Keys | 104 (US) Layout, 105 (EU) layout – depending upon country |
| | Dimensions (L x W x H) | 17.67x 6.62 x 1.38 in (449 x 168 x 35 mm) |
| | Weight | 1.7 lb (0.77 kg) minimum |
| **Electrical** | Operating voltage | + 5VDC ±5% |
| | Power consumption | 50-mA maximum (with three LEDs ON) |
| | System interface | USB Type A plug connector |
| | ESD | CE level 4, 15-kV air discharge |
| | EMI - RFI | Conforms to FCC rules for a Class B computing device |
| | Microsoft PC 99 - 2001 | Functionally compliant |
| **Mechanical** | Keycaps | Stepped -profile design |
| | Switch actuation | 55-g nominal peak force with tactile feedback |
| | Switch life | 20 million keystrokes |
| | Switch type | Contamination-resistant switch membrane |
| | Key-leveling mechanisms | For all double-wide and greater-length keys |
| | Cable length | 7 ft (2.2 m) |
| | Microsoft PC 99 - 2001 | Mechanically compliant |
| | Acoustics | 43-dBA maximum sound pressure level |
| **Environmental** | Operating temperature | 50° to 122° F (10° to 50° C) |
| | Non-operating temperature | 4° to 149° F (-20° to 65° C) |
| | Operating humidity | 10% to 95% (non-condensing at ambient) |
| | Non-operating humidity | 0% to 95% (non-condensing at ambient) |
| | Operating shock | 40 g, six surfaces |
| | Non-operating shock | 80 g, six surfaces |
| | Operating vibration | 2-g peak acceleration |

| | | |
|---|---|---|
| | Non-operating vibration | 4-g peak acceleration |
| | Drop (out of box) | 26 in (66 cm) on carpet, six-drop sequence |
| | Drop (in box) | 42 in (107 cm) on concrete, 16-drop sequence |
| **Approvals** | UL, cUL, FCC, CE, TUV GS, VCCI, BSMI, C-Tick, KCC, USB-IF, WHQL, EN/IEC 60601-1, IP66/NEMA4X | |
| **Ergonomic compliance** | ANSI HFS 100, ISO 9241-4, and TUVGS | |

| **HP Wireless Keyboard and Mouse** | | |
|---|---|---|
| **Keyboard** | Dimensions (H x L x W) | 1.09 x 18.1 x 6.47 in (27.87 x 460.3 x 164.3 mm) |
| | Weight – Without Two AA Alkaline Batteries | 1.94 lb (880 g) |
| **Mouse** | Dimensions (H x L x W) | 1.46 x 4.53 x 2.47 in (37 x 115 x 62.9 mm) |
| | Weight – Without Two AA Alkaline Batteries | 0.15 lb (67 g) |
| **Receiver** | Dimensions (H x L x W) | 0.33x 1.79 x 0.72 in (8.4 x 45.5 x 18.4 mm) |
| | Weight | 0.21 oz (5.9 g) |
| | Cable Length – Minimum | 6 ft (1.8 m) |
| | Range | 32.8 ft (10 m) |
| **System Requirements** | Available USB port for the receiver<br>CD-ROM Drive<br>*This system may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See http://www.microsoft.com/windows/windows-7/ for details. | |
| **Approvals** | Product Safety | UL; CSA /TUV (Europe only); CE Mark; CB Report |
| | Ergonomics | ANSI; ISO (Europe only); GS Mark (Germany only) |
| | EMC | FCC; CE; ACA (-tick); BSMI; KC ; VCCI |
| | CE Mark | EN 55022:2010; EN 55024; EN 301489-1; EN 61000 |
| | Design Guidelines for PCs | PC 99 – connector overmold colors; PC 2001 – full functionality |
| | Telecom | All local telecom requirements and approvals for intended markets |
| | USA | FCC Title 47 CFR, Par 15, Subpart C; other local requirements |

| | | |
|---|---|---|
| | Country Support | US, Belgium, Switzerland, Spain, Denmark, Netherlands, France, Germany, Italy, Portugal, Sweden, Norway, Finland, UK, Poland, Czech Republic, Turkey, Greece, Austria, Bulgaria, Cyprus, Estonia, Hungary, Ireland, Latvia, Lithuania, Luxemburg, Malta, Romania, Slovakia, Slovenia, Vietnam, HK, Australia, NZ, Malaysia, Singapore, Indonesia, Philippines, Thailand, Canada, China, Japan, Korea, Taiwan, India, Venezuela, Ecuador, Russia, Ukraine, Israel, Croatia, United Arab Emirates, Peru, Brazil, Chile, Argentina, Mexico, South Africa, and up to 193 countries worldwide. |
| **Environmental** | Keyboard contains 25% post-consumer recycled plastic material. | |

| **HP PS/2 Mouse** | | |
|---|---|---|
| **Dimensions** (H x L x W) | 1.46 x 2.48 x 4.53 in (3.70 x 6.29 x 11.50 cm) | |
| **Weight** | 3.53 oz (100g; +10g/- 5 g) | |
| **Environmental** | Operating temperature | -32° to 104°F (0° to 40° C) |
| | Non-operating temperature | -4° to 140°F (-20° to 60° C) |
| | Operating humidity | 10% to 90% (non condensing at ambient) |
| | Non-operating humidity | 10% to 90% (non condensing at ambient) |
| | Operating shock | 40 g, 6 surfaces |
| | Non-operating shock | 80 g, 6 surfaces |
| | Operating vibration | 2 g peak acceleration |
| | Non-operating vibration | 4 g peak acceleration |
| | Drop (out of box) | 80 cm height onto asphalt tile over concrete or equivalent, 5-drop in 5 direction except the cable face |
| **Electrical** | Operating voltage | 5 VDC ± 10% |

| | | |
|---|---|---|
| | Power consumption | 100mA |
| | System consumption | PS/2 mini-din connector |
| | ESD | CE level 4, 15 kV air discharge |
| | EMI-RFI | Conforms to FCC rules for a Class B computing device |
| | Microsoft PC99 - 2001 | Functionally compliant |
| **Mechanical** | Resolution | 800 DPI |
| | Tracking speed | 10 in/s (25.4 cm/s) maximum |
| | Acceleration | ±15% |
| | Switch actuation | 65±20 gf |
| | Switch life | 3,000,000 operations (using Hasco modified tester) |
| | Switch type | Low force micro-switches |
| | Tracking mechanism life | 80 km |
| | Cable length | 6 ft (1.8 m) |
| | Microsoft PC99 - 2001 | Mechanically compliant |
| **Scroll wheel** | Width | 6 mm |
| | Diameter | 22.5 ± 0.2 mm |
| | Maximum rotation force | 50 gf-cm |
| | Switch type | Light force micro-switch |
| | Switch life | 1 million operations |
| | Mechanical life | Minimum 200,000 revolutions |
| **Regulatory Approvals** | UL/cUL, FCC, CE Mark, TUV/GS, VCCI, KCC, BSMI, C-Tick | |

## HP USB Optical Mouse

| | |
|---|---|
| **Dimensions** (H x L x W) | 1.5x 4.5 x 2.5 in (3. 7x 11.5 x 6.3 cm) |
| **Weight** | 0.22 lb (0.10 kg) |
| **Cable length** | 70.9 in (180 cm) |
| **System requirements** | Available USB port |

| **HP USB 1000dpi Laser Mouse** | | |
|---|---|---|
| **Dimensions** (H x L x W) | 1.47 x 4.53 x 2.47 in (37.3 x 114.97 x 62.86 mm) | |
| **Weight** | 3.360 oz (102g) | |
| **Cable length** | 70.9 in (180 cm) | |
| **System requirements** | Available USB port | |
| **Environmental** | Operating Temperature | 32° to 104° F (0° to 40° C) |
| | Non-operating Temperature | -4° to 140° F (-20° to 60° C) |
| | Operating Humidity | 10% to 90% (non-condensing at ambient) |
| **Mechanical** | Resolution | 1000dpi |
| | Tracking Speed | 45 cm/sec |
| | Cable Length | 70.9 in (180 cm) |

| **HP USB PS/2 Washable Mouse** | | |
|---|---|---|
| **Dimensions** (H x L x W) | 1.56 x 2.44 x 4.61 in (3.95 x 6.21 x 11.7 cm) | |
| **Weight** | 4.44 oz (126 g) | |
| **Environmental** | Operating temperature | -32° to 104°F (0° to 40° C) |

| | | |
|---|---|---|
| | Non-operating temperature | -4° to 140°F (-20° to 60° C) |
| | Operating humidity | 10% to 90% (non condensing at ambient) |
| | Non-operating humidity | 10% to 90% (non condensing at ambient) |
| | Operating shock | 40 g, 6 surfaces |
| | Non-operating shock | 80 g, 6 surfaces |
| | Operating vibration | 2 g peak acceleration |
| | Non-operating vibration | 4 g peak acceleration |
| | Drop<br>(out of box) | 80 cm height onto asphalt tile over concrete or equivalent, 5-drop in 5 direction except the cable face |
| **Electrical** | Operating voltage | 5 VDC ± 10% |
| | Power consumption | 100mA |
| | System consumption | PS/2 mini-din connector |
| | ESD | CE level 4, 15 kV air discharge |
| | EMI-RFI | Conforms to FCC rules for a Class B computing device |
| | Microsoft PC99 - 2001 | Functionally compliant |
| **Mechanical** | Resolution | 400 ± 20% DPI |
| | Tracking speed | 10 in/s (25.4 cm/s) maximum |
| | Acceleration | 100 in/s/s (2.54 m/s/s) |
| | Switch actuation | 61 g nominal peak force |
| | Switch life | 3,000,000 operations (using Hasco modified tester) |
| | Switch type | Low force micro-switches |
| | Tracking mechanism life | 155 mi (250 km) at average speed of 10 in/s |
| | Cable length | 6 ft (1.8 m) |
| | Microsoft PC99 - 2001 | Mechanically compliant |
| **Scroll wheel** | Width | 8 mm |
| | Diameter | 1.01 in (25.6 mm) |
| | Maximum rotation speed | 48 rats/sec |
| | Switch type | Light force micro-switch |
| | Switch life | 1 million operations |
| | Mechanical life | Minimum 200,000 revolutions |

| | | |
|---|---|---|
| **Regulatory Approvals** | Compliant | UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC |

**Eco-Label Certifications & declarations**

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- IT ECO declaration
- US ENERGY STAR®
- EPEAT <Gold> registered in the United States. See http://www.epeat.net for registration status in your country.

**System Configuration**

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Desktop model is based on a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

| **Energy Consumption (in accordance with US ENERGY STAR® test method)** | **115VAC, 60Hz** | **230VAC, 50Hz** | **100VAC, 60Hz** |
|---|---|---|---|
| Normal Operation (Short idle) | 30.42 W | 30.51 W | 30.38 W |
| Normal Operation (Long idle) | 19.01 W | 19.18 W | 19.02 W |
| Sleep | 1.91 W | 1.96 W | 1.89 W |
| Off | 1.42 W | 1.40 W | 1.39 W |

Note:

Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family . HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

| **Heat Dissipation*** | **115VAC, 60Hz** | **230VAC, 50Hz** | **100VAC, 60Hz** |
|---|---|---|---|
| Normal Operation (Short idle) | 104 BTU/hr | 104 BTU/hr | 104 BTU/hr |
| Normal Operation (Long idle) | 65 BTU/hr | 66 BTU/hr | 65 BTU/hr |
| Sleep | 7 BTU/hr | 7 BTU/hr | 6 BTU/hr |
| Off | 5 BTU/hr | 5 BTU/hr | 5 BTU/hr |

*NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

| **Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)** | Sound Power ($L_{WAd}$, bels) | Sound Pressure ($L_{pAm}$, decibels) |
|---|---|---|
| Typically Configured – Idle | 3.5 | 24 |
| Fixed Disk – Random writes | 4.0 | 29 |

**Longevity and Upgrading**

This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:

- 6 USB ports
- 2 memory slots
- 1 Mini PCIe half-length slot
- 1 MXM 3.0 Type A - 35W slot
- 1 mSATA slot
- 1 2.5" internal bay supporting up to Two 2.5" hard drives (HDD/SSD/SED/SSHD)
- 1 5.25" external supporting optical drive

<edit list of features as required>

Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.

**Batteries**

This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:
Mercury greater the1ppm by weight
Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)
Battery type: Lithium

*Technical Specifications – Environmental Data*

**Additional Information**

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the <gold> level, see www.epeat.net
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 36.9% post-consumer recycled plastic (by wt.)
- This product is 97.6% recycle-able when properly disposed of at end of life.

**Packaging Materials**

| | | |
|---|---|---|
| **External:** | PAPER/Corrugated | 1516 g |
| | PAPER/Paper | 94 g |
| **Internal:** | PLASTIC/EPE-Expanded Polyethylene | 533 g |
| | PLASTIC/Polyethylene low density | 39 g |

The EPE foam packaging material is made from 25% recycled content.
The corrugated paper packaging materials contains at least 0% recycled content.

**Material Usage**

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/qse.pdf):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

*Technical Specifications – Environmental Data*

**Packaging Usage**

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

**End-of-life Management and Recycling**

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

**Hewlett-Packard Corporate Environmental Information**

For more information about HP's commitment to the environment:

Global Citizenship Report
http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html
Eco-label certifications
http://www8.hp.com/us/en/hp-information/environment/ecolabels.html
ISO 14001 certificates:

http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf

and

http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

*After-Market Options (availability may vary by region)*

**AFTER MARKET OPTIONS:**

| **ADDITIONAL MONITORS FOR MULTI-DISPLAY CONFIGURATIONS** | **Part Number** |
|---|---|
| HP EliteDisplay E190i 18.9-inch LED Backlit Monitor | E4U30AA |
| HP EliteDisplay E201 20-inch LED Backlit Monitor | C9V73AA |
| HP EliteDisplay E221 21.5-inch LED Backlit Monitor | C9V76AA |
| HP EliteDisplay E221c 21.5-inch Webcam LED Backlit Monitor | D9E49AA |
| HP EliteDisplay E231 23-inch LED Backlit Monitor | C9V75AA |
| HP EliteDisplay E241i 24-inch LED Backlit Monitor | F0W81AA |
| HP EliteDisplay E271i 27-inch LED Backlit Monitor | D7Z72AA |
| HP L2206tm 21.5-inch LED Backlit Touchscreen Monitor | B0L55AA |
| HP EliteDisplay S230tm 23-inch Touch Monitor | E4S03AA |
| **MEMORY** | **Part Number** |
| HP 4GB DDR3-1600 (PC3-12800) SODIMM | B4U39AA |
| HP 8GB DDR3-1600 (PC3-12800) SODIMM | B4U40AA |
| **DATA STORAGE DRIVES AND ACCESSORIES** | **Part Number** |
| HP 500GB SATA , 6G (8GB cache) Solid State Hybrid Drive (SSHD) | E1C62AA |
| HP 128GB SATA Solid State Drive | QV063AA |
| Intel Pro 1500 180GB SATA SED Opal1 Solid State Drive | G4M04AA |
| HP Slim SATA DVD-ROM Drive | VP033AA |
| HP Slim SATA BDXL Blu-Ray Writer Drive | E0X94AA |
| HP Slim SATA SuperMulti DVD Writer Drive | QS209AA |
| **INPUT DEVICES – KEYBOARD AND MOUSE COMBO** | **Part Number** |
| HP USB PS/2 Washable Keyboard & Mouse<br>(Keyboard contains 25% post-consumer recycled plastic material) | BU207AA |
| HP Wireless Keyboard & Mouse<br>(Keyboard contains 25% post-consumer recycled plastic material) | QY449AA |
| **INPUT DEVICES – KEYBOARD** | **Part Number** |
| HP PS/2 Keyboard | QY774AA |
| HP USB Grey Keyboard | B6B64AA |
| HP USB Smart Card (CCID) Keyboard | E6D77AA |
| HP USB Keyboard | QY776AA |
| **INPUT DEVICES – MOUSE** | **Part Number** |

*After-Market Options (availability may vary by region)*

| | |
|---|---|
| HP PS/2 Mouse | QY775AA |
| HP USB 1000dpi Laser Mouse | QY778AA |
| HP USB Mouse | QY777AA |
| HP Mouse Pad | AT485AA |
| **SECURITY** | **Part Number** |
| HP UltraSlim Cable Lock | H4D73AA |
| **GRAPHICS – VIDEO ADAPTERS AND CABLES** | **Part Number** |
| HP DisplayPort Cable Kit | VN567AA |
| HP DisplayPort To DVI-D Adapter | FH973AA |
| HP DisplayPort To HDMI Adapter | BP937AA |
| HP DisplayPort To VGA Adapter | AS615AA |
| HP DVI Cable | DC198A |
| USB Graphics Adapter | NL571AA |
| Dual Output USB Graphics Adapter | C5U89AA |
| **STANDS AND MONITOR ARM** | **Part Number** |
| AiO Height Adjustable and Reclining Stand | C1N43AA |
| HP Single Monitor Arm | BT861AA |
| HP (Flat Panel Monitor) Quick Release | EM870AA |
| **NETWORKING/COMMUNICATIONS** | **Part Number** |
| Intel 7260 802.11 a/b/g/n PCIe x1 WLAN Card | F2P07AA |
| **MISCELLANEOUS** | **Part Number** |
| Belkin 7-Outlet Surge Protector for North America 120V | AG290AA |
| Belkin USB to Serial Adapter | EM449AA |
| Belkin CAT5e Patch Cable RJ45/RJ45 | AH122AA |
| HP Business Headset | QK550AA |

**LANDESK SOFTWARE (E-DELIVERY)**

Contact your HP representative for available options.

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| **Date of change:** | **Version History:** | | **Description of change:** |
|---|---|---|---|
| May 23, 2014 | From v1.7 to v1.8 | Added | Intel 7260 802.11 a/b/g/n PCIe x1 WLAN Card as option and aftermarket. |
| | | Added | Replaced power table. |
| June13, 2014 | From v1.8 tov1.9 | Changed | Footnotes, networking/communications, Power |
| September 10, 2014 | From v1.9 to v3 | Added | Added the whole Environmental data chart |
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